

From: [Jill Resler](#)
To: [Kylee Deniz](#)
Cc: [Bill Even](#); [Bill Winkelman](#); [John Johnson](#)
Subject: RE: MN Pork's STRETCH Conference
Date: Wednesday, January 3, 2018 9:03:44 AM

Kylee:

THANK YOU!

If there are a couple key people on NPB's staff that would like to attend let me know and I will pass on the registration information.

I will work with Vicki to get you an invoice this morning.

In gratitude,

Jill

From: Kylee Deniz [mailto:KDeniz@pork.org]
Sent: Tuesday, January 02, 2018 12:45 PM
To: Jill Resler
Cc: Bill Even; Bill Winkelman; John Johnson
Subject: RE: MN Pork's STRETCH Conference

Hi, Jill –

Great to hear from you and thank you for presenting National Pork Board with the opportunity to invest in Minnesota Pork's first STRETCH Conference! Across our organization, we've pulled together \$10,000 to support you/ Minnesota Pork. Please send me the invoice and I will route accordingly for payment. If there are other ways we can contribute such as be in attendance to work behind the scenes or simply observe, please let us know.

Thanks & Happy New Year!

Kylee Deniz

Director of Marketing & Producer Outreach
515-223-2752
kdeniz@pork.org

National Pork Board

1776 NW 114th Street
Clive, Iowa 50325

From: Jill Resler [<mailto:jill@mnpork.com>]

Sent: Tuesday, January 2, 2018 9:58 AM
To: Kylee Deniz <KDeniz@pork.org>
Cc: Bill Even <BEven@pork.org>
Subject: MN Pork's STRETCH Conference

Good morning, Kylee.

MN Pork will be hosting our first STRETCH Conference which is an experience designed exclusively for the next generation of pork industry stakeholders (approximately 25-45 year-olds) that will serve as an opportunity to STRETCH perspectives in the areas of leadership, societal pressures and business. STRETCH arms attendees with the necessary resources and tools to successfully navigate the challenges of a next generation pork industry stakeholder, while also honoring the demands they face personally. STRETCH will ensure their time is well-invested.

This year's agenda will focus on – technology in food (cultured meat, gene editing, GMOs), business, and leadership strategies utilizing coaching. A full speaker line-up is detailed below. I believe our agenda is both timely and relevant.

In order to bring this caliber of speakers together it has taken a substantial financial commitment, one that would be challenging for most states to do. NPPC has committed \$10,000 to offset Minnesota's investment into the conference. Would there be an opportunity to request funding from NPB as well?

Additional details are outlined below, which includes some FAQs.

Appreciate the consideration. I am in the office most of today and tomorrow if you would like to discuss further via phone.

Take care,

Jill

Background:

The Minnesota Pork Board and Minnesota Pork Producers Association Board of Directors believe it is imperative to foster the growth and development of the next generation of pork industry stakeholders. Minnesota Pork will best serve you, our stakeholders, by bringing forward expertise in the areas of leadership, societal pressures, and business while providing an opportunity for networking with peers.

Who should attend?

Next generation pork industry stakeholders that are approximately 25 to 45 years-old.

When is it?

February 7 (10 a.m.) to February 8 (noon)

Where is it?

Courtyard by Marriot Hotel and Event Center – Mankato, MN

Cost to attend?

None – STRETCH is made possible by investments in the Pork Checkoff and the Strategic Investment Program.

Registration:

<http://www.mnpork.com/stretch-leadership-conference/>

Hotel:

Courtyard by Marriot Hotel and Event Center – Mankato, MN

MN Pork will be covering the hotel room cost.

For room reservations call: (507) 388-1234

Featured Speakers and Topics:

Exclusive Screening of Food Evolution

Amidst a brutally polarized debate marked by passion, suspicion and confusion, FOOD EVOLUTION, by Academy Award®-nominated director Scott Hamilton Kennedy explores the controversy surrounding GMOs and food. Traveling from Hawaiian papaya groves, to banana farms in Uganda to the cornfields of Iowa, the film, narrated by esteemed science communicator Neil deGrasse Tyson, wrestles with the emotions and the science driving one of the most heated arguments of our time.

<https://www.foodevolutionmovie.com/about/the-film/>

Professor Mark Post

Professor Post is a Dutch pharmacologist who is a Professor of Vascular Physiology at Maastricht University and Professor of Angiogenesis in Tissue Engineering at the Technical University of Eindhoven. In 2008 he was the first in the world to present proof of concept for cultured meat.

Professor Pamela Ronald

Professor Ronald is a plant pathologist and geneticist. She is a professor in the Genome Center and the Department of Plant Pathology and founding faculty director of the Institute for Food and Agricultural Literacy (IFAL), all at the University of California, Davis. Ronald co-authored the book *Tomorrow's Table: Organic Farming, Genetics and the Future of Food* with her husband, Raoul Adamchak.

Eric Williams

Eric Williams is a partner in the Indianapolis office of Barnes & Thornburg LLP and a member of the firm's Intellectual Property Law Department. His practice is focused on preparing and prosecuting

patent applications through the United States Patent and Trademark Office and counseling clients on the protection of intellectual property. He is a member of the firm's Food, Drug, and Device Law Practice Group, and in this regard has provided advice to multiple clients in the pharmaceutical industry and prepared patent term extension (PTE) applications for FDA-approved products.

Dr. Danny Klinefelter

Dr. Danny A. Klinefelter specializes in agricultural finance and management development. He is the director of The Executive Program for Agricultural Producers (TEPAP) and Executive Secretary for the Association of Agricultural Production Executives (AAPEX). He is a business columnist for DTN, Chairman of the advisory board for Farm Journal Media's Top Producer Executive Network and a member of the board of AgTexas Farm Credit Services. Danny spent 10 years in commercial banking and the Farm Credit System.

Nathan Jamail

Nathan is the author of three bestselling books, and has spent the last two decades helping and coaching leaders and organizations on how to build winning cultures and helping great leaders become great coaches. Nathan understands the difficulties that many leaders face in balancing the job of running the business and developing employees. As a business leader in corporate America and a small business owner for over 20 years, Nathan has a great deal of personal experience in the role of a leader and a coach.

Jill Resler

COO

Minnesota Pork Board

Minnesota Pork Producers Association

151 Saint Andrews Ct. Ste. 810

Mankato, MN 56001

jill@mnppork.com

O: 507.345.8814

C (b) (6)

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From: [Rob Christine](#)
To: [Stephen Herring](#)
Subject: Re: Missouri Fake Meat
Date: Thursday, September 27, 2018 7:29:57 AM

Missouri passed a law about labeling of cultured meat.

Sent from my iPhone

> On Sep 27, 2018, at 6:26 AM, Stephen Herring <sherring@pork.org> wrote:
>
> Hey Rob,
>
> I had a request from Phyllis in TN pertaining to the lawsuit about fake meat in Missouri. I wanted to let you know that I forwarded her email to Don Nikodim and Cody McKinley. This was what I was calling about the other day and couldn't remember why I called.
>
> Thanks,
>
> Stephen Herring
> Producer and State Regional Manager
> National Pork Board
> 910-379-7555
>
> _____
>
> Please conserve our natural resources, think twice before you print this e-mail.

From: [Dallas Hockman](#)
To: [Mike King](#)
Subject: Misinformation and Meat
Date: Friday, September 7, 2018 10:51:14 AM

To view this email in a web browser, [click here](#).

NPPC Food and Ag Vision



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In This Issue

[What to Know](#)

Misinformation
& Meat

[What to Read](#)

Trade Treaties
Meaning of Meat

[Who to Know](#)

Julie Anna Potts
Ramon Laguarta
Kathleen Merrigan

Quote of the Month

“ You may have seen a Consumer Reports story claiming that the poultry and meat you purchase in the grocery store and feed your families could contain harmful drug residues. That is not true. This story is sensational and fear-based infotainment aimed at confusing shoppers with pseudoscience and scare tactics. ”

— Carmen Rottenberg, Acting Deputy Under Secretary for Food Safety, [USDA](#)

What to Know

Greetings.

In recent weeks, activist groups have worked to spread misinformation about food production and safety. *Consumer Reports* has once again abused consumer trust in its brand, this time [misleading](#) readers by presenting unconfirmed data as evidence that the USDA is not properly inspecting or enforcing the safety of meat and poultry products. USDA and industry groups have responded to the article with facts, emphasizing that the products in question were safe — the screening results could not be duplicated upon further testing. We must continue to spread the word that we are producing the safest, most abundant supply of meat and poultry products in history.

The month of August also brought continuing developments in trade policy. NAFTA negotiations advanced to a partial resolution. USDA unveiled details for its tariff relief package, including the largest purchase of pork products in USDA history, nearly reaching \$600 million. While both of these steps will help farmers and ranchers, much work remains before markets are fully open to agriculture exports.

Additionally, special interest groups opposed Missouri’s law that presents alternative protein from being called meat. Meanwhile, NPPC worked with protein groups to assure lab-grown meat products will be regulated by USDA Food Safety Inspection Service.

Sincerely,

Dallas signature



Dallas Hockman
National Pork Producers Council
VP Industry Relations

Dallas Hockman



What to Read

Negotiating Murky Trade Waters

Several trade-related developments emerged toward the end of the month. On Aug. 27, USDA [released](#) details for its tariff relief package. The same day, *Feedstuffs* [reported](#) the Trump administration reached a preliminary agreement with Mexico to update the North American Free Trade Agreement (NAFTA).

- National Pork Producers Council President Jim Heimerl [thanked](#) the administration for the aid package, but he reiterated the need to resolve trade disputes.
- Agriculture Secretary Sonny Perdue [defended](#) the long-term aims of President Trump's trade strategy.
- *The Los Angeles Times* [emphasized](#) that the deal with Mexico places more pressure on Canada to reach an agreement on NAFTA.
- Food & Water Watch Executive Director Wenonah Hauter [criticized](#) NAFTA for attacking "environmental protection, food safety and consumer rights."

The Meaning of 'Meat'

The battle over what to call imitation meat products continued to escalate in August. The Associated Press reported that Tofurky, Good Food Institute, American Civil Liberties Union of Missouri and Animal Legal Defense Fund [filed suit](#) against the state of Missouri on Aug. 27. The groups contested the state's recent law that [limits](#) the term "meat" to products "derived from harvested production livestock or poultry."

- In *Vox*, agriculture policy journalist Tamar Haspel [wrote](#) a synopsis of the issue to date.
- In a news release, the suing groups [argued](#) that the law suppresses freedom of speech.
- Chase Purdy of *Quartz* [noted](#) the reversal of roles from GMO labeling: "The Missouri beef industry borrowed a move from the animal-activist playbook."
- On Aug. 23, Memphis Meats and the North American Meat Institute (NAMI) [sent](#) (PDF) a letter to President Trump, requesting that FDA and USDA coordinate regulation of lab-grown meat products.
- NAMI CEO Barry Carpenter [told](#) *Agri-Pulse* that emphasizing safety will help protect the value of meat products.

Who to Know

Julie Anna Potts
President and CEO,
NAMI

Ramon Laguarta
CEO,
PepsiCo

Kathleen Merrigan
Executive Director,
Swette Center for Sustainable
Food Systems

Potts will join North American

Laguarta will take the helm at

Merrigan will lead Arizona State

Meat Institute (NAMI) effective Sept. 24. She previously served as executive vice president and treasurer of the American Farm Bureau Federation. ([NAMI](#))

PepsiCo in October, replacing Indra Nooyi, who served as CEO for the past 12 years. Laguarta has been with Pepsi for 22 years, most recently serving as the company's president. ([PepsiCo](#))

University's recently established Swette Center for Sustainable Food Systems. Merrigan was deputy secretary of agriculture during the Obama administration. ([Arizona State University](#))

National Pork Producers Council, 10676 Justin Drive, Urbandale, IA 50322

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Sent by [hockmand@nppc.org](#)

Please conserve our natural resources, think twice before you print this e-mail.

From: [Reilly from CB Insights](#)
To: [Andy Brudtkuhl](#)
Subject: 15-Min Flash Briefing: Future of Protein
Date: Tuesday, April 10, 2018 12:27:45 PM



15-MIN FLASH BRIEFING

The Future of Protein



Hi there.

The world's population is expected to surge to 9.6B by 2050, leading to a 61% increase in food production. This begs the question of how society will sustainably feed future generations.

Join CB Insights for a data-driven view on how startups and new technologies are shaping the future of alternative proteins through plant-based proteins, lab-grown meat, and more.

TUESDAY, APRIL 17TH 1 PM EDT



Even if you can't make it, [register anyway](#) and we'll send you a copy of the slides and recording.

CAN'T WAIT TO SEE YOU THERE!



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NEW YORK NY 10018 USA

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From: [John Johnson](#)
To: [Bill Even](#)
Cc: [Jarrod Sutton](#); [Dave Pyburn](#); [Kevin Waetke](#)
Subject: Re: [Save the Date] Future Food-Tech New York, 2018
Date: Monday, March 5, 2018 10:40:40 PM

They also put on similar events in London and maybe even one in Asia.

John A. Johnson

On Mar 5, 2018, at 10:19 PM, Bill Even <BEven@pork.org> wrote:

Thanks guys and yes, this is the same organization that hosts the meeting in March in California.

I am trying to decide if this is just another event management company trying to ride the latest fad.

I don't know the horsepower of the organization.

On Mar 5, 2018, at 9:10 PM, John Johnson <johnjohnson@pork.org> wrote:

Bill, this is the east coast version of the conference I asked you about in San Francisco <https://futurefoodtechsf.com/>, which is where I saw the discussion last year on "clean meat".

John A. Johnson

On Mar 5, 2018, at 9:42 PM, Jarrod Sutton <jsutton@pork.org> wrote:

Thanks for sending, Bill.

I agree with Dr. Pyburn – (b) (5)

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Jarrod Sutton

Vice President, Domestic Marketing

National Pork Board, Des Moines, IA

P 515 223 2766 | C (b) (6)

jsutton@pork.org

<image001.png>

From: Dave Pyburn

Sent: Monday, March 5, 2018 8:36 PM

To: Bill Even <BEven@pork.org>; Jarrod Sutton <jsutton@pork.org>

Cc: Kevin Waetke <kwetke@pork.org>; John Johnson

<johnjohnson@pork.org>

Subject: RE: [Save the Date] Future Food-Tech New York, 2018

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```

Phone: 515-223-2634
Cell: (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

I am interested in your opinion of the value of having someone from NPB attend this (b) (5)

We can check.

Thanks,

Bill

From: Ellen McLeay
[\[mailto:Ellen.mcleay=rethinkevents.com@mail194.wdc02.mcdlv.net\]](mailto:Ellen.mcleay=rethinkevents.com@mail194.wdc02.mcdlv.net) **On**
Behalf Of Ellen McLeay
Sent: Monday, March 5, 2018 11:43 AM
To: Bill Even <BEven@pork.org>
Subject: [Save the Date] Future Food-Tech New York, 2018

Advisory Board Announced | [View in browser](#)



Dear Bill,

With growing urban populations, demand for more sustainable food products, and the need

to tackle the relationship between food and health, the food sector faces unprecedented challenges. The market, however, presents extraordinary opportunities for positive impact.

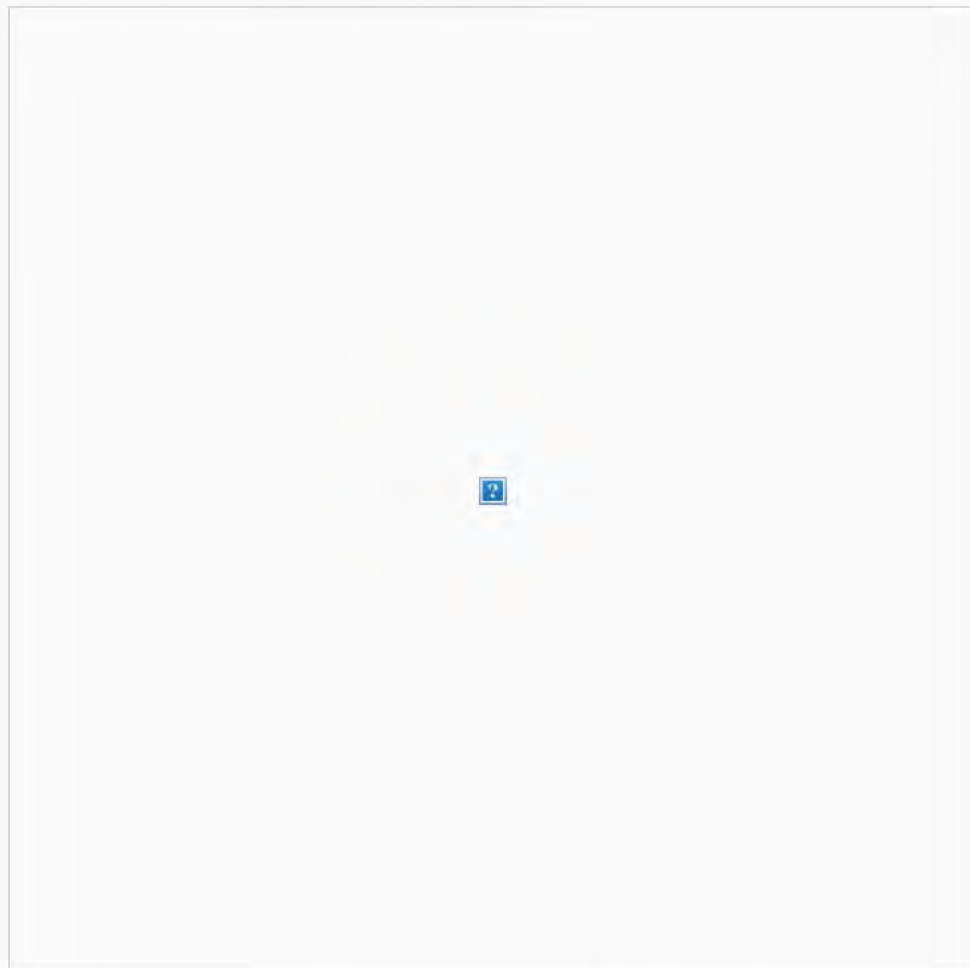
How is the fast-growing food-tech sector leveraging these opportunities?

[Future Food-Tech](#) is returning for the third time to New York on June 19-20, attracting an international delegation from across the food chain.

Working alongside our prestigious Advisory Board we've put together an extensive agenda, showcasing new collaborative innovation models, innovative ideas for nutrition and health, next-generation proteins and the role of technology in addressing food waste, safety and distribution.

[SEE THE FULL AGENDA](#)

With Special Thanks to Our Advisory Board:



There are lots of opportunities to get involved in the debate: If you have a great story to tell, a game-changing solution to showcase, or would like to share your expertise on one of our panels, please call us on +44 1273 789989 or email [Ellen McLeay](#) for more information.

FIND OUT MORE

We look forward to hearing from you!

Ellen McLeay
Conference Producer
Rethink Events
Ellen.mcleay@rethinkevents.com

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United Kingdom

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Lutton, Sara - AMS

From: Dave Pyburn
Sent: Monday, December 17, 2018 6:25 PM
To: Cindy Cunningham
Subject: Accepted: NPB discussion on Cell Cultured Meat--

Lutton, Sara - AMS

From: Conference Room A
Sent: Monday, December 17, 2018 6:15 PM
To: Cindy Cunningham
Subject: Accepted: NPB discussion on Cell Cultured Meat--

Your request was accepted.

Sent by Microsoft Exchange Server 2013

Lutton, Sara - AMS

From: Conference Room A
Sent: Monday, January 28, 2019 5:34 PM
To: Cindy Cunningham
Subject: Accepted: NPB discussion on Cell Cultured Meat--

Your request was accepted.

Sent by Microsoft Exchange Server 2013

Lutton, Sara - AMS

From: Jarrod Sutton
Sent: Wednesday, January 9, 2019 5:46 PM
To: Cindy Cunningham
Subject: Accepted: NPB discussion on Cell Cultured Meat--

Lutton, Sara - AMS

From: Dave Pyburn
Sent: Wednesday, January 9, 2019 3:10 PM
To: Cindy Cunningham
Subject: Accepted: NPB discussion on Cell Cultured Meat--

When: Jan 29, 2019 10:00:00 AM

Where: Conference Room A

Lutton, Sara - AMS

From: Conference Room A
Sent: Wednesday, January 9, 2019 2:41 PM
To: Cindy Cunningham
Subject: Accepted: NPB discussion on Cell Cultured Meat--

Your request was accepted.

Sent by Microsoft Exchange Server 2013

Lutton, Sara - AMS

From: Jarrod Sutton
Sent: Monday, December 17, 2018 9:52 PM
To: Cindy Cunningham
Subject: Accepted: NPB discussion on Cell Cultured Meat--

From: [John Johnson](#)
To: [Andy Brudtkuhl](#)
Subject: Re: Agrifood — the \$8 trillion industry that's worth your salt
Date: Friday, November 2, 2018 6:21:51 PM

Hopefully I will retire before this gets to scale!

John A. Johnson
Chief Operating Officer
National Pork Board
[1776 NW 114th Street](#)
[Clive, IA 50325](#)

On Nov 2, 2018, at 11:56 AM, Andy Brudtkuhl <ABrudtkuhl@pork.org> wrote:

Even though products are yet to hit the shelves, the appeal is clear: The meat market will be worth [\\$7.3 trillion](#) by 2025, with a [73 percent increase](#) in demand by 2050. And clean meat technology could allow for the production of meat at virtually infinite scale: In just two months, [50,000 tons](#) of pork cells could be grown per bioreactor by using starter cells from 10 pigs. This could dramatically reduce the production cost of meat, and also its environmental cost: [6x less water is needed and 4x less greenhouse gas is emitted](#) per pound of clean meat compared to “traditional” meat.

<https://techcrunch.com/2018/11/01/agrifood-the-8trn-industry-thats-worth-your-salt>

Please conserve our natural resources, think twice before you print this e-mail.

From: [John Johnson](#)
To: [Dave Pyburn](#); [Liz Wagstrom](#); [Dan Kovich](#); brownc@nppc.org
Subject: clean meat
Date: Monday, January 22, 2018 12:29:07 PM

<http://www.ift.org/food-technology/past-issues/2018/january/features/cultured-clean-meat.aspx>

John A. Johnson

Chief Operating Officer

National Pork Board

1776 NW 114th Street

Clive, IA 50325

Office Phone: 515-223-2765

Cell Phone: (b) (6)

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From: [Craig Morris](#)
To: [Bill Even](#); [John Johnson](#); [Dave Pyburn](#); [Kevin Waetke](#)
Subject: Clean Meat: The Clean Energy of Food | Paul Shapiro | TEDxSouthLakeTahoe
Date: Thursday, January 4, 2018 6:22:41 PM
Attachments: [image002.png](#)

This showed up on my linkedin. Interesting to watch.

https://www.youtube.com/watch?time_continue=486&v=j2_JYNZcgKc

Craig Morris, Ph.D.

Vice President, International Marketing

National Pork Board, Des Moines, IA

P 515 223 2621 | C (b) (6)

cmorris@pork.org



Please conserve our natural resources, think twice before you print this e-mail.

From: [Smith, Sarah Maki](#)
To: [Tom Cocking](#); [Chris Hostetter](#); [Neibergs, Joseph Shannon](#); [Kerr, Susan \(AGR\)](#); [Schwartz, Dane Wells](#); [Jasmer, Douglas Philip](#); [Kuber, Paul Steven](#); [McConnel, Craig Stephen](#)
Cc: [Simonson, Abby](#)
Subject: 2019 Washington Swine Information Day
Date: Monday, January 21, 2019 3:44:20 PM
Attachments: [WASwineInfoDayRegistration2019-Final.pdf](#)

Hello All Again—In a hurry to get out of the office on Friday, I attached the 2012 registration brochure (Thanks Chris for catching that). Here is the 2019 registration brochure.

Have a good week

SMS

Hello All—Thank you for agree to speak at our 2019 Washington State Swine Information Day on February 1, 2019 in Moses Lake. We are starting to prepare packets and identify necessary equipment. Could you please any handouts you would like reproduced by January 29, 2019 so that we can get them in the packets. I will have a PC computer and projector available for your presentation—please let me know if you have additional equipment needs. Also, I have scheduled you all for lunch (as a speaker it has been comped by the Washington Pork Producers). If you would like to stay for dinner, you are more than welcome and we will comp that too, but we need to know by January 30 so that we can arrange enough dinners.

Please let me know if you have any additional needs or questions about the day—we typically get about 65 people with everything from a show pig to commercial producers at the event.

Look forward to seeing you in a couple weeks

SMS

Sarah M. Smith

Extension Regional Specialist--Animal Sciences
WSU Grant-Adams Extension
1525 E. Wheeler Rd.
Moses Lake, WA 98837

Office Phone: (509) 754-2011, Ext. 4313

Cell Phone: (b) (6)

(800) 572-0119 (toll free in Washington)

Fax: (509)766-2334

<http://grant-adams.wsu.edu>

<http://animalag.wsu.edu>

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Why Participate?

Washington Swine Information Day features an array of presentations that have been organized to meet the diverse and unique needs of Pacific Northwest swine producers.

Featured speaker, Dr. Chris Hostetler, National Pork Board Director of Animal Science and former WSU Swine Center Manager and WSU Professor will be back in the Pacific Northwest to share his expertise in swine production and new technology in the swine and meat animal industry. Dr. Hostetler has an excellent understanding of swine production from breeding to marketing and the unique challenges and opportunities in raising pigs in Washington.

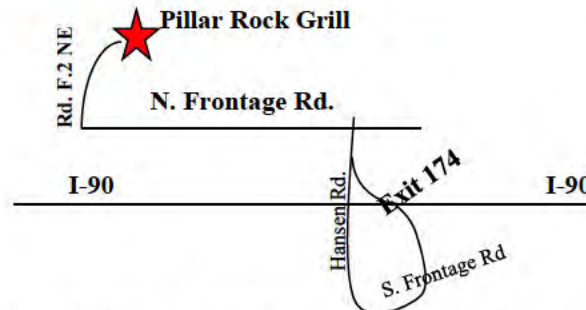
The event's morning topics will focus on new technology and emerging issues in the swine industry. Dr. Hostetler will present about the impact of gene editing, cultured meat and other new technology. Current issues around swine diseases within the US and worldwide, and swine market trade and outlook will also be addressed.

The afternoon session will focus on the basics of raising pigs for producers of all sizes. WSU Vet School Parasitologist will discuss parasite control and prevention in Washington. Dr. Hostetler will give a presentation on reproduction basics for the swine herd.



LOCATION: Pillar Rock Grill

Moses Lake Golf & Country Club
1373 Rd F.2 NE
Moses Lake, WA 98837



From I-90 West: Exit 174, right on Hansen, immediate left on N Frontage Rd, right on Rd F.2 NE, straight to Pillar Rock Grill

From I-90 East: Exit 174, right on S Frontage Rd, right on Hansen, left on N Frontage Rd, right on Rd F.2 NE, straight to Pillar Rock Grill

Who Should Attend:

- Commercial and Small Producers
- Niche Pork Marketers
- Agriculture Educators
- Agency Representatives
- Youth Producers
- Fair & Jr. Show Representatives.

Register NOW to hold your spot!!

Registration is \$25 for the day's events and includes seminars, handouts, and lunch. A late fee of an additional \$15 will be applied to registrations post marked after January 26.

To register by check, fill out form on back page and mail in.

To register with a credit card, visit www.BrownPaperTicket.com and enter event # ??????

Washington Swine Information Day

A seminar designed for progressive pork producers and stakeholders in Washington State and other PNW States.

**February 1, 2019
Pillar Rock Grill
Moses Lake, WA**



Washington Swine Information Day

February 1, 2019



- 8:30 AM **Registration**
- 9:00 **Welcome—WSU Extension & WPP**
- 9:10 **New Technology in Animal Agriculture Production: What it Means for Swine Producers.**
—Dr. Chris Hostetler, Director of Animal Sciences, National Pork Board, Clive, IA
- 10:00 **2019 Economic Outlook on Pigs, Feed, and Other Economic Impacts.**
—Dr. Shannon Neibergs, WSU Extension Livestock Economist, Pullman
- 10:50 **Break**
- 11:10 **WSU Student Swine Coop. Update**
—Student Swine Coop. Members, Pullman
- 11:40 **Disease Concerns and Biosecurity for Swine Farms**
—Dr. Susan Kerr, DVM, WSDA Educational Specialist, Mount Vernon
- 12:30 PM **WPP Luncheon —National Pork Board Update and Research Priorities**
—Dr. Chris Hostetler, Director of Animal Sciences, National Pork Board, Clive, IA
- 1:30 **Parasite Prevention and Control**
—Dr. Doug Jasmer, Professor, WSU Veterinary Microbiology & Pathology. Pullman
- 2:30 **Reproduction 101—Sow/Gilt Management, Boar Management, AI, Farrowing, and Piglet Care**
—Dr. Chris Hostetler, Director of Animal Sciences, National Pork Board, Clive, IA
- 3:30 **Break**
- 3:50 **Rapid Fire Update from NPB, WSU, and WPP**
—What PIN Tags Are, When They are Required— Dr. Chris Hostetler
—Youth for the Quality Care of Animals (YQCA)—Dr. Paul Kuber
(youth in attendance will receive a free online YQCA training coupon)
—Bourbon and Bacon 2018 Recap—Dr. Paul Kuber
—Demand for Direct Marketing Workshop—Mr. Tom Cocking
- 4:45 **Adjourn**
- 5:00 **WPP Dinner and Annual Meeting** —Tom Cocking, WPP President

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<i>Includes: seminar, handouts, break, lunch & handouts</i>			
Afternoon Session (1:00-5:00 PM)	\$10	x	= \$
No Lunch —includes <u>afternoon</u> seminar, break & handouts			
Additional Lunch	\$20	x	= \$
WPP Evening Dinner	\$25	x	= \$
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From: [Dave Pyburn](#)
To: terry.fleck@FoodIntegrity.org
Subject: FW: 2018/2019 CFI research sponsorship opportunity
Date: Tuesday, November 6, 2018 9:00:00 AM
Attachments: [image002.png](#)
[image003.png](#)
[Meat Alternatives .pdf](#)
[CFI Meat Alternatives 6.21.18.pptx](#)

Terry:

Can I share this information with others outside of NPB? Some good information here and I have a crew at CSU working on Alternative Proteins that would benefit from seeing this.

Dr. Dave Pyburn
Vice President of Science and Technology
National Pork Board
1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634
Cell: (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

From: Terry Fleck (CFI) <terry.fleck@FoodIntegrity.org>
Sent: Wednesday, October 31, 2018 5:09 PM
To: Bill Even <BEven@pork.org>; Dallas Hockman <hockmand@nppc.org>
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May we count you in as a sponsor of this exciting, new tool to help inform engagement, targeting and messaging strategy?

I will touch base shortly to discuss.

Thanks and best regards,
-Terry

<image002.png>

[<image003.png>](#)

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WHO'S BEHIND THE MEAT ALTERNATIVES TREND AND WHAT MOTIVATES THEM?

Interest in alternatives to meat is growing amid the ever-changing dietary preferences of today's consumers. Call it what you'd like: lab-grown meat, cultured meat, fake meat, clean meat or alternative protein, it involves taking cells from animals or plants and turning them into tissue to make burgers, nuggets and other products. A very specific group of consumers is driving the trend, and they've attracted the attention of researchers, investors and food companies.

Using our new digital cultural insights tool, The Center for Food Integrity has identified who's driving the market and why. Our ability to peer into the minds of meat-alternative fans provides a roadmap to understand how to reach them and where to find them: useful information whether you're on the cutting edge of meat alternatives or marketing the "real deal."

In this issue of CFI Confidential, we delve into the topic with a detailed profile of those interested in alternative meat, including their motives, fears, attitudes and values, as well as their favorite platforms, publications and influencers, all of which inform the best strategy to reach them.

I. A Trail of Digital Breadcrumbs in Real Time

II. Who's Putting the "Cult" in Cultured Meat?

III. "Meat" Them Where They Are

IV. The Evolution of Consumer Research and Engagement

I. A Trail of Digital Breadcrumbs

Harken back to high school when you were likely introduced to ethnography in social studies class. It's essentially the study of people, their interactions and behaviors, through observation – eliminating the biases introduced when posing questions about such things. In other words, ethnography reveals what people actually do, not what they say they do. For example, Bob may say, "I rarely eat processed foods," but observation may tell us he eats chips five days a week.

The shortcoming of traditional ethnography is that the observation itself can influence behavior. Enter the Internet, and with it a new world of research opportunity.

Today's digital ethnography tracks the trail of online breadcrumbs – observing and identifying the attitudes and motivations of people like Bob.

CFI's new digital ethnography tool, the first comprehensive search engine for instant consumer insight, can perform social science analysis on millions of consumer interactions online in real time related to any trend or topic, allowing us to:

- Instantly identify the socio-demographics including age, education, gender, and socioeconomic status.
- Understand why people care about the trend or topic, instantly delivering the dominant attitudes, motivations, values and fears that drive the topic.
- Determine how mature a trend is, and its total market potential, instantly mapping how quickly the trend is being adopted and identifying the current market size versus future market potential.



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Additionally, the system can reveal the dominant influencers and brands, identify the dominant news articles related to the topic, compare statistics to national averages, examine how a trend has changed over time, compare multiple topics and trends and much more.

II. Who's Putting the "Cult" in Cultured Meat?

"Cult" may be a bit dramatic, but a small, influential and well-defined group of consumers is taking a keen interest in meat substitutes as companies carefully dip their toes in the water of this niche market.

Our analysis reveals strong emotional and social motivations for those who desire cultured meat, which have little to do with the food itself. They want to be responsible citizens and want to make a meaningful difference in society. They believe meat substitutes help them achieve a higher purpose.

The core market for meat alternatives is well-educated white women, ages 25-44, with middle and upper-middle socioeconomic status, who are either single or in a relationship without children. This market is still in the very early stages of development with a core of 15-million consumers and a potential market of 156-million.

It's interesting to note that the National Cattlemen's Beef Association (NCBA) and the Pennsylvania Beef Council are among the top 10 brands engaging on the topic. They share this space with two additional brands focused on selling "sustainably-raised beef," leveraging the anti-corporate sentiment of those looking for meat alternatives.

Media coverage was focused on three themes prior to the recent Food and Drug Administration (FDA) meeting and discussion about which federal agency has regulatory authority:

- The health and lifestyle benefits of meat alternatives in lifestyle publications such as Food Network, Shape, Glamour, but also in the New York Times.
- The positive impact of meat alternatives on the environment, driven by Fortune's coverage of Leonardo DiCaprio's investment in meat alternatives.
- The growing investment in meat alternatives by conventional meat companies. Appearing in the New York Times, Fortune and Forbes.

Consumers are motivated to explore meat alternatives because they want to have control over what they eat. They feel that society (corporations, governments, etc.) does everything in its power to take control away from them, turning them into mindless consumers. They're deeply motivated to examine these societal pressures and do everything they can to avoid the things that governments and corporations try to sell them.

The top fear of consumers interested in meat alternatives is that they are not making a real difference. They worry that despite their best efforts to live by their values (social and environmental responsibility), they are not having any positive effect on the world around them. This, they believe, is likely because the "system" is rife with corruption and collusion. These consumers value civic engagement in "community" in order to feel part of something bigger than themselves. They feel like their contributions have a positive impact on others.

People exploring meat substitutes hold large corporations in contempt, believing they care only about profits. It's important to these consumers to be critical of large corporations because they question the quality of the products produced, and believe large corporations lack the drive to develop solutions.

Those who are opting for meat alternatives want to prove they have a higher set of values and purpose. They fear leaving the planet uninhabitable. They believe that large corporations will



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intentionally misinform consumers because they only care about money. They also believe that the American food system and its products are toxic for the body and damaging to the environment. They feel strongly that local, natural (however they define it), unaltered food is better.

III. "Meat" Them Where They Are

These online breadcrumbs help inform engagement, targeting and messaging strategy. In fact, they provide a roadmap of sorts.

Armed with a detailed profile of this group of consumers, as previously outlined, we can easily identify key influencers who are shaping opinions and driving the discussion online. Through digital targeting, they can be directly engaged. Because we also know the motivations, fears and beliefs behind the interest in meat alternatives, content can be created that "speaks to them." This is true whether you are a proponent or critic of meat alternatives.

Those who market animal-based protein need to address the deeper drivers behind the trend: the motivations, fears and values of these consumers, not just attack meat alternatives to protect their market. A battle over labeling is likely to distance the industry further from these consumers, so a smart strategy would be to seize opportunities to align your values with theirs, demonstrating ways in which the consumption of meat is consistent with social and environmental responsibility.

This approach is consistent with CFI's foundational trust research, which reveals that aligning values is three to five times more powerful in building trust than sharing science and facts. As an example, meat marketers might highlight the role meat plays in a healthy diet, the dramatic improvements in sustainability, and how livestock farmers are producing more using fewer natural resources than at any time in history.

A word of caution: the meat alternatives market is likely to grow, consistent with current cultural trends disrupting the food system, so disregarding it as a passing interest (the proverbial burying one's head in the sand) could also be detrimental.

If you market meat alternatives, a similarly smart strategy is to engage influencers who are aspirational for these consumers, easily identified from the digital roadmap. Engage with them in a manner that reinforces their belief that moving to meat alternatives helps them make a meaningful difference and achieve their desired higher purpose.

Just as we believe it is an ineffective strategy for animal-based protein producers to attack meat alternatives, we also believe those marketing meat alternatives would be wise to avoid attacking animal agriculture. As a general matter, research shows that mainstream consumers respond poorly to food fights (attacks and counter attacks within the food system). While some consumers may welcome it, others are turned off by it. A circular firing squad also erodes trust in the food system overall.

IV. The Evolution of Consumer Research and Engagement

Our analysis of the meat alternatives trend is one example from the millions of topics and trends we can now explore in minutes. Remarkable. The evolution of consumer research empowers a new world of consumer engagement that is more precise, effective and affordable than traditional campaigns.

The ability to identify the specific consumer influencers driving a topic or trend and to produce content that we know will align with their values and beliefs is a powerful capability. It is a golden ticket to trust-building opportunities.

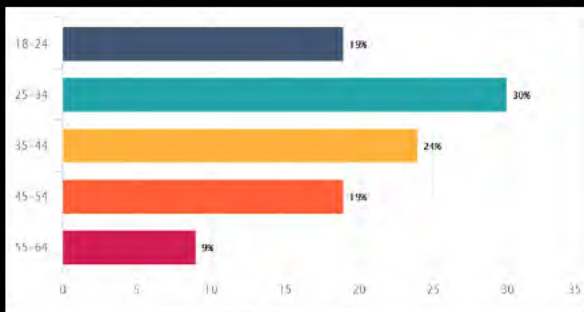


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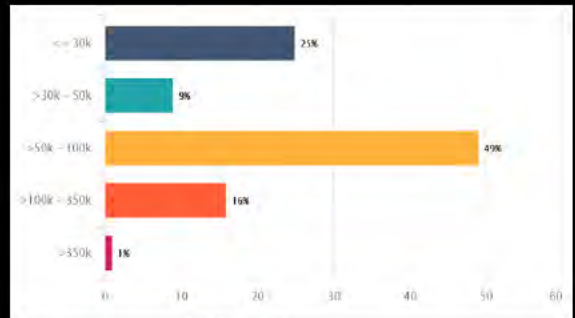


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It is also reason for those within the food system to shed old excuses for being disengaged. Clearly, some food system leaders are fully embracing new opportunities for trust-building engagement. We salute you. To those on the sidelines, we extend a special invitation to seize the moment.

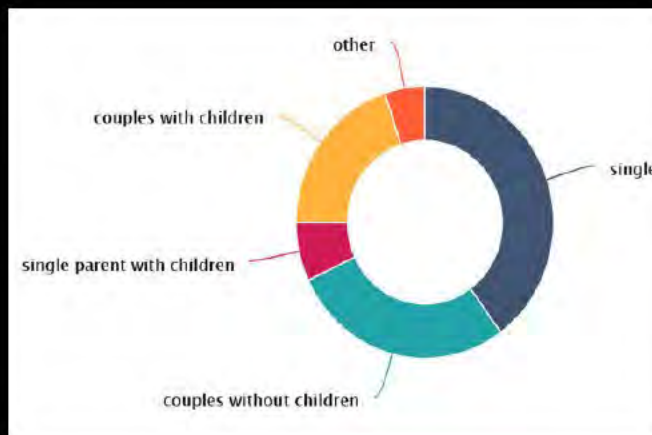


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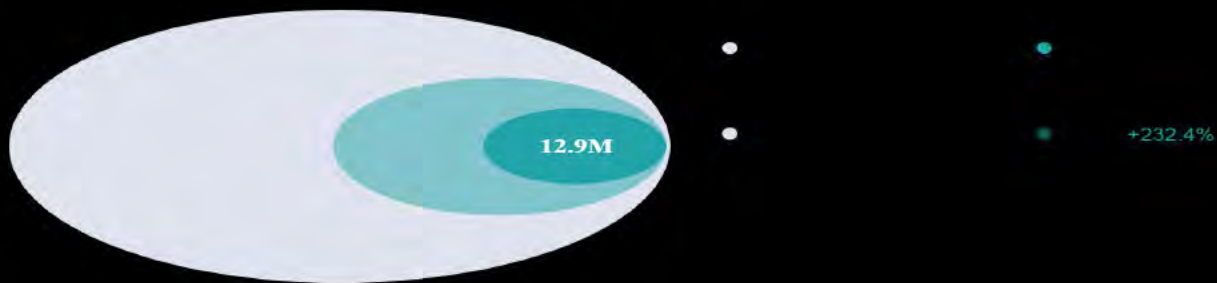
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From: [Dave Pyburn](#)
To: [Belk Keith](#); [Steve Weiss \(steve@nutriquest.com\)](#); [Chris Hostettler \(CHostettler@pork.org\)](#); [Adria Huseh](#); [Steve Larsen](#)
Subject: FW: 2018/2019 CFI research on alternatives
Date: Tuesday, November 6, 2018 10:01:00 AM
Attachments: [image003.png](#)
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The sample report may be of interest to you.

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National Pork Board
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Phone: 515-223-2634
Cell: (b) (6)
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Email: DPyburn@pork.org

From: Terry Fleck (CFI) <terry.fleck@FoodIntegrity.org>
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To: Bill Even <BEven@pork.org>; Dallas Hockman <hockmand@nppc.org>
Subject: 2018/2019 CFI research sponsorship opportunity

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Thanks and best regards,
-Terry



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TERRY FLECK, CAE
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From: [Dave Pyburn](#)
To: [Laura Bachmeier](#)
Subject: Accepted: FW: USDA FDA Joint Animal Cell Cultured Meat Technology Public Meeting

From: [Laura Bachmeier](#)
To: [Cindy Cunningham](#)
Subject: Accept: NPB discussion on Cell Cultured Meat--

lbachmeier@pork.org has accepted this meeting.

From: [Dallas Hockman](#)
To: [Steve Larsen](#); [Dave Pyburn](#); [Jarrod Sutton](#)
Subject: FW: Alternative Protein
Date: Tuesday, July 24, 2018 12:26:10 PM
Attachments: [Meat of the Matter - Alternative Protein.pdf](#)

Dallas Hockman
Vice President of Industry Relations
National Pork Producers Council
10676 Justin Drive
Urbandale, IA 50322
Bus: 515-278-8012
Cell: (b) (6)

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MEAT OF THE MATTER

Fake Pork for Breakfast?

Dr. Dan Kovich

*DVM, Director, Science & Technology
National Pork Producers Council*



"Alternative Proteins" are a hot topic right now; the media, business and farmers are looking at the future of these products and their potential impact on the animal protein sector. The products fall into two groups: plant-based, which are currently on the market; and "lab grown" or "cultured," which are derived from animal cells and are still in the development stage. There are companies working in both categories targeting real pork products such as bacon and breakfast sausage. NPPC is focused on the issue and is determined to protect the integrity of traditionally produced, real pork products.

Plant Based Products Mimicking Meat?

Plant-based products have been around for many years. So why are we talking about them now? Because such products are increasingly trying to mimic the taste, appearance and eating experience of real meat products. Many of us remember the first "veggie burgers" hitting grocery shelves. Manufacturers of these products wanted to differentiate them from animal protein, and anyone who has tried one knows immediately they are not pork, beef or poultry. What is new is an expanding range of products that are deliberately formulated to look, taste and smell like the real meat products they are imitating. While the success of these efforts is very debatable, what is not arguable is that in their labeling and marketing of these products manufacturers are trying to blur the distinction between their products and ours. Packages often go so far as to have pictures of animals on them, or use words such as "beefy" in large type (much larger than any indication that the product is plant-based). Many of the products are trying to occupy the best of both worlds, with their manufacturers making broad claims about sustainability and taking issue with animal agriculture while trying to mimic meat on store shelves.

Laboratory Produced or Cultured Products: What's In a Name?

There are several companies—both new startups and established food companies—trying to bring to market "meat" products produced in laboratories from cell lines of animal origin. Basically, they are growing pig (or cow, chicken or turkey) muscle and fat cell cultures and combining them to create a product meant to mimic ground pork (or beef, or chicken, or turkey). To date, they have not been able to do this successfully on anything near a commercial scale. The cost is too high, and the production process reportedly too unreliable to bring the products to market. However, companies operating in this space have been able to attract a lot of investment, and they are getting closer to delivering a consumer product. While we are a long way away—if ever—from seeing a lab grown pork chop, competition in the ground product categories is likely.

There is no broad agreement on a name for this category of products. While many people use "laboratory produced," that name will be less appropriate if and when the process is commercialized. The terms "cultured meat" and "in-vitro produced meat" are technically accurate but may not clearly differentiate them from traditional products for consumers. Proponents of such product often refer to it as "clean meat," which is obviously meant to disparage traditional meat products and is not acceptable, or true.

What is NPPC doing on this Issue?

NPPC is working to address three key issues surrounding plant-based and cultured meat products. While we can't keep the products from entering the market, we are working with the rest of the barnyard to understand the products and how they are produced, to ensure they are rigorously regulated and to make sure they are labeled in a way that makes it clear to consumers how they were produced and what they contain. These efforts are to ensure that such products compete on a level playing field with our products.

1. What is coming down the pipeline? How is it produced?

Developing a clear understanding of these products is critical. Both plant-based and cultured products are often promoted as being more sustainable, environmentally friendly, ethical and "pro-animal" than traditionally produced meat. These claims are generally accepted without challenge by interested consumers but have not been subject to rigorous examination. Particularly regarding cultured products, there are a lot of unanswered questions. The development of these products is very shrouded in secrecy. We need to know the animal source of the cell lines used and the inputs used in replicating them outside an animal. How are they "fed"? Are antibiotics used, and if not, how can manufacturers be allowed to call these products "clean"? NPPC is working with other animal protein stakeholders to explore these questions and to hold the proponents of these products responsible if they demean pork production either explicitly or through misleading descriptions of their products. Again, the use of the phrase "clean meat" is something we cannot and will not accept.

2. How is it regulated?

Plant-based products have been and will continue to be regulated by the U.S. Food and Drug Administration (FDA). Since cultured products are a completely new thing and have not yet hit the market, there is a question about whether they should be regulated by the FDA or by USDA's Food Safety and Inspection Service (FSIS). Proponents of the products want them regulated by the FDA. This is not surprising since FDA regulation will give them far less scrutiny in both inspection of the production process and the making of label claims. NPPC—and the rest of the barnyard—feels strongly that the products should be regulated by FSIS. This is critical to ensuring a level playing field if the products are going to be positioned as animal protein. They should be subject to the same requirements we are: continuous inspection, HACCP verification, antemortem and postmortem inspection of source animals and all the other FSIS requirements pertaining to the production of red meat and poultry products. The USDA has agreed that it should have jurisdiction over all products sourced from animals covered by FSIS—such as pigs, cattle, sheep, goats, and poultry. NPPC is working to make sure that this regulatory framework is adopted. Others are also active in this space; the United States Cattlemen's Association, for example, petitioned FSIS, asking the agency to conclude that plant-based and "lab cultured" products are neither "meat" nor "beef." (NPPC has indicated to FSIS that, should this petition be successful, we expect the same action for "pork.") Rep. Rosa DeLauro, D-Conn., has asked the U.S. Government Accountability Office to examine the appropriate regulatory framework for "lab cultured" products.

3. What is it called?

This will be a critical issue going forward. FSIS regulations define terms such as "meat" and "meat food product" and establish standards of identity for meat and poultry products. This prevents plant-based products from calling themselves meat (and by extension pork, beef, etc.). However, many makers of these products are skirting the line with the language they are using on product labels or in marketing campaigns. NPPC has brought this to the attention of FSIS and FDA. FSIS has assured us that they appreciate our concerns and that they are working with both FDA and the Federal Trade Commission to address this issue. A joint announcement from these agencies about cracking down on plant-based labeling issues is expected shortly.



It is equally critical that cultured products are labeled correctly when they hit the market. Products containing only muscle and fat cells cannot be called “meat” or “pork” without qualification. Pork has more in it than just muscle and fat cells, and this is fundamental to the eating experience and nutritional profile that people expect and enjoy when eating pork products. FSIS does have a definition for “meat food product,” and this is the likely home for cultured products. There is already precedent for this in the requirement that mechanically separated meat products be labeled as such; they cannot be called “pork” without the “mechanically separated” in front of it. When it comes to cultured products, we have the same expectation. Manufacturers of such products should not be able to mix cultured muscle and fat cells of pig origin together and call the product “ground pork.” That term must be reserved for actual ground pork muscle cuts. A label name such as “In-vitro Produced Pork Food Product” is appropriate and would ensure there is no consumer or market confusion as to what the product is. Once the regulatory framework for cultured products is settled, NPPC will work diligently to continue our efforts on appropriate label claims.

In summary, NPPC is working on the issue of plant-based and cultured alternative proteins to protect the term “pork.” These efforts are focused in three key areas:

- **We need to understand how these products are produced and hold accountable those who make unsubstantiated claims about the sustainability or ethics of their products. The phrase “clean meat” is not acceptable for cultured protein products.**
- **NPPC is fighting for a level regulatory playing field. This means that cultured protein products must be regulated by FSIS. NPPC is supporting Trump administration and congressional efforts to make sure this happens.**
- **Plant-based alternative protein products cannot be called pork, and cultured products cannot be called pork without qualification making it clear how they were made. Consumers can choose pork sausage or bacon for breakfast, or they can choose an “in-vitro produced pork food product.”**

NPPC CONTACTS

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Media Inquiries:

Jim Monroe, Senior Director, Communications, monroej@nppc.org

Dave Warner, Director, Communications, warnerd@nppc.org; 202-347-3600



From: [Dave Pyburn](#)
To: [Bill Even](#); ["John Johnson \(johnjohnson@pork.org\)"; "Jarrod Sutton"; Brett Kaysen](#); [Adria Huseh](#); [Steve Larsen](#)
Subject: Alternative Protein
Date: Tuesday, April 10, 2018 2:27:00 PM

POSTED ON APRIL 9, 2018 BY RECORD HERALD

Clean meat, or 'green slime?'

COLUMNS, OPINION

By Richard Berman - Guest Columnist

What do you call soy, corn, and other vegetable components that have been heavily seasoned and processed into nearly inedible discs to be cooked later? It goes by many names—fake meat, plant-based meat—but consumers really ought to view it as the new mystery meat.

Plant-based burgers are supposed to be the biggest restaurant trend in 2018. One product, the Impossible Burger, is now sold in 1,000 establishments nationwide.

But what is actually in them? Plant-protein burgers don't grow on trees. And corn doesn't naturally taste like beef. (Sadly.) In order to turn plants into what looks like and kind-of tastes like a real burger requires a lot of chemical processing.

The laboratory making the Impossible Burger looks better suited for big pharma than your neighborhood butcher. Metal drums churn a frothy red liquid, which contains yeast that's genetically modified to produce vast quantities of the meat-flavor mimic, soy leghemoglobin.

When Impossible Foods attempted to get confirmation that soy leghemoglobin is safe for human consumption in 2014, the U.S. Food and Drug Administration (FDA) raised concerns that the engineered protein might cause allergic reactions in people. To date, the FDA still hasn't approved soy leghemoglobin as safe for human consumption.

And that's not all. In order to mimic the texture of ground beef, the makers of the Impossible Burger turned to textured wheat protein and soy protein isolate, two heavily processed ingredients that should churn your stomach faster than a vat of modified yeast.

To isolate vegetable proteins, oil is removed by bathing beans or other plant parts in hexane, a byproduct of refining gasoline. The U.S. Centers for Disease Control classifies hexane as a neurotoxin, and the Environmental Protection Agency classifies it as a hazardous air pollutant. Unlike the European Union, the FDA hasn't established a maximum allowable amount of hexane residue in food products, except in spices and hops. As such, the FDA doesn't monitor processed food for the presence of hexane. That means your "clean" veggie burger could come with a side of petroleum byproducts without you even knowing about it.

On another front, "clean" meat has been getting a lot of press coverage as another replacement for the traditional hamburger. Scientists have taken tissue samples from living animals and then spent

millions replicating certain cells in a lab. The first burger produced cost north of \$300,000, but the price has dropped significantly in the past few years. Though it's still more expensive than the natural alternative, one company expects to have product in supermarkets this year.

But the reality is once again much different from the marketing. The meat is labeled "clean," which consumers may interpret as lacking additives. "Clean meat does not require antibiotics or hormones," say proponents.

Except that it does. The muscle tissue that's been cultivated is bathed in serum (either embryonic or an artificial alternative) that contains a litany of hormones to foster cell growth. This process takes time, like raising an animal.

And currently, antibiotics are used. Lab-grown meat is still living cells, which are susceptible to attack from microorganisms. Antibiotics are needed to ensure that the cells don't fall prey to bacteria.

Moreover, the same technology that's gone into developing genetically modified crops (GMOs) will likely have to be incorporated at some point in order to make a product that looks like real meat. Gene silencing, splicing, and other technologies might end up limiting antibiotic usage, for example. Ironically, the same environmental activists who have stigmatized GMOs for years are now seeing lab-grown meat as a helpful tool for their cause.

Does the use of antibiotics or genetic technology mean lab-grown meat is bad? No—just as these tools are used by livestock and crop farmers to raise healthy animals or improved corn.

If makers of these products—let's call them "alternative meat"—can make something that is safe and affordable, that's good for everyone. Prices go down and people get what they want. But being transparent is critical for this burgeoning industry. It's also important that government regulators and the public at large know what's going on these labs so they can make informed choices about their food.

Richard Berman is the executive director of the Center for Consumer Freedom in Washington, D.C.

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Cell: (b) (6)
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Email: DPyburn@pork.org

From: [Steve Weiss](#)
To: [Dave Pyburn](#)
Subject: RE: am I remembering right...
Date: Saturday, February 9, 2019 1:37:43 PM

That's hilarious!

From: Dave Pyburn <dpyburn@pork.org>
Sent: Saturday, February 9, 2019 11:06 AM
To: Steve Weiss <steve@nutriquest.com>
Subject: RE: am I remembering right...

Yes, I think I could go back to either of their meetings. I did a lot of lip biting and said nothing in the plant meeting and said very little in the cell-based meeting. Several did comment on the copious notes that I took. I almost facetiously had Shapiro autograph the free copy of his book (Clean Meat) that each attendee got but I thought better of it in the end.

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From: Steve Weiss <steve@nutriquest.com>
Sent: Saturday, February 9, 2019 10:02 AM
To: Dave Pyburn <dpyburn@pork.org>
Subject: RE: am I remembering right...

That makes perfect sense. Would be hard not attend something like that and not get into it with Shapiro and the Good Food Institute folk. Do you suppose you'd be welcomed back at both group's meetings in the future?

From: Dave Pyburn <dpyburn@pork.org>
Sent: Saturday, February 9, 2019 7:40 AM
To: Steve Weiss <steve@nutriquest.com>
Subject: RE: am I remembering right...

Yes. Just got back home last night. I have about a dozen pages of notes to put together from the presentations. They were very curious as to why I was there. More friendly than the plant protein folks were a few weeks ago. Most were less into bad mouthing traditional ag than the plant people were. The cell-based people are more into the merits of their product rather than bashing ours, except for Shapiro and GFI of course and a few other misled young save the world types. Tyson and Cargill also at this meeting and I suspect that is why many of the entrepreneur and CEO types were friendly toward traditional ag – they want to be bought by these larger food companies or at least get their investment.

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Email: DPyburn@pork.org

From: Steve Weiss <steve@nutriquest.com>

Sent: Friday, February 8, 2019 5:46 PM

To: Dave Pyburn <dpyburn@pork.org>

Subject: am I remembering right...

...that you attended this conference this week?

[https://industrializingcellbasedmeats.com/?](https://industrializingcellbasedmeats.com/?utm_source=PPC&utm_medium=Search&gclid=Cj0KCQiAoJrfBRC0ARIsANqKS_6cV-tAdq5ftDdppBXXKEb6VxHa-eHV54ktHlaTgWXRkaeJMcU1zxgaAhaFEALw_wcB)

[utm_source=PPC&utm_medium=Search&gclid=Cj0KCQiAoJrfBRC0ARIsANqKS_6cV-tAdq5ftDdppBXXKEb6VxHa-eHV54ktHlaTgWXRkaeJMcU1zxgaAhaFEALw_wcB](https://industrializingcellbasedmeats.com/?utm_source=PPC&utm_medium=Search&gclid=Cj0KCQiAoJrfBRC0ARIsANqKS_6cV-tAdq5ftDdppBXXKEb6VxHa-eHV54ktHlaTgWXRkaeJMcU1zxgaAhaFEALw_wcB)

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From: [Dan Kovich](#)
To: [Liz Wagstrom](#); [Belk,Keith](#)
Cc: [Dave Pyburn](#); [Steve Weiss \(steve@nutriquest.com\)](#); [Adria Huseh](#)
Subject: Re: Alternative Proteins
Date: Thursday, October 4, 2018 10:27:52 AM

They have rolled back the “end of the year” claim by saying it will be overseas.

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From: Liz Wagstrom
Sent: Thursday, October 4, 2018 9:25:46 AM
To: Belk,Keith
Cc: Dave Pyburn; Dan Kovich; Steve Weiss (steve@nutriquest.com); Adria Huseh
Subject: Re: Alternative Proteins

How do you release a food product that has no regulatory oversight?!
On Oct 4, 2018, at 9:24 AM, Belk,Keith <Keith.Belk@ColoState.EDU> wrote:

Wow! We continue to contact all of these possible sources of product, but they are still reluctant to give us access to any of it.

Keith E. Belk
Professor
Ken & Myra Monfort Endowed Chair
Center for Meat Safety & Quality
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Fort Collins, CO 80523-1171
Tel. (970) 491-5826
Cell (b) (6)
Email: Keith.Belk@ColoState.edu

Sent from my iPhone

On Oct 4, 2018, at 7:49 AM, Dave Pyburn <dpyburn@pork.org> wrote:

<https://www.livekindly.co/meatable-bovine-serum-slaughter-free-lab-grown-clean-meat/>

The company uses pluripotent stem cells, which can be manipulated into any type of cell without the need for fetal cow blood.

... consumers may see clean meat by [JUST by the end of this year](#) (Pyburn: the end of this year is less than 3 months away!). It will be released on a very limited basis, likely at

a restaurant, claims JUST CEO Josh Tetrick.

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From: [Dave Pyburn](#)
To: [Liz Wagstrom](#); [Belk,Keith](#)
Cc: [Dan Kovich](#); [Steve Weiss \(steve@nutriquest.com\)](#); [Adria Huseth](#)
Subject: RE: Alternative Proteins
Date: Thursday, October 4, 2018 10:27:00 AM

In reading the JUST article it looks like it will be released in a country other than the US

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From: Liz Wagstrom <wagstromL@nppc.org>
Sent: Thursday, October 4, 2018 9:26 AM
To: Belk,Keith <Keith.Belk@ColoState.EDU>
Cc: Dave Pyburn <dpyburn@pork.org>; Dan Kovich <Kovichd@nppc.org>; Steve Weiss (steve@nutriquest.com) <steve@nutriquest.com>; Adria Huseth <ahuseth@pork.org>
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From: [Rick Berman](#)
Subject: "Clean Meat" is the future of animal activism
Date: Wednesday, November 7, 2018 11:46:48 AM

I wanted to share this very revealing op-ed published in the conservative *National Review*. In it, a vegan activist argues the new agenda of animal activism will be the promotion of fake meat

He argues that vegans have found it very difficult to convince people to give up meat (true). At the same time, lab-grown meat provides an avenue that consumers will accept—a “like for like” product that reduces the number of animals used for food

I invite you to read the whole thing. The choice of publication is more evidence of animal-rights messaging targeting conservatives with an opportunity to protect their health, the environment and animals

-Rick

<https://www.nationalreview.com/2018/11/clean-meat-the-future-of-vegetarianism/>

‘Clean Meat,’ the Future of Vegetarianism

By [JACY REESE](#) | November 6, 2018 6:30 AM

For decades, vegans have worked tirelessly to recruit more vegans, but that won’t work. We need a bigger solution to the issues in our food system.

Vegans have tried everything. They have gone undercover on hundreds of farms to document cruelty, produced award-winning documentaries, written books, created YouTube channels, staged thousands of protests, and passed out millions of leaflets to inform people of the damage that animal agriculture does to animals, the planet, and human health.

This has led to a modest increase in the number of vegetarians. In the United States, where we have the best data, it’s grown from perhaps around 1 percent of the population in the 1990s to around 3 to 5 percent in the 2010s, with half of vegetarians saying they are fully vegan, meaning they abstain not just from meat but also from dairy and eggs. This is only a small dent in the mass suffering caused by factory farms: Note that [over 99 percent](#) of farmed animals in the United States are in factory farms, as are [over 90 percent](#) of the over 100 billion farmed animals globally.

To put it bluntly: Going vegan or vegetarian seems to just be too difficult for most people. Not many are willing to deviate from the status quo and from their habit of eating animals, no matter how strong the moral arguments are or how much vegans advocate for their cause.

This just isn’t how social change works. It’s virtually unheard of for a social movement to succeed through individual consumer change. Social change is almost always accomplished through institutions: governments, companies, non-governmental organizations, and technology.

Fortunately, vegan advocates have an incredible opportunity to change their tactics: *clean meat* — real meat made from animal cells without animal slaughter — named in homage to *clean energy*. Scientists are now able to make meat by taking a small sample of cells from a living animal through a biopsy, using a Q-tip swab. These cells are placed in a mixture of nutrients and growth factors that allows them to replicate in the same process that happens inside an animal’s body.

The final product is meat, down to the molecular level. The first clean-meat products [are expected](#) to be released commercially — of course, in very limited supply, at least at first — over the next two years. If vegans help cultivate this technology and encourage companies and governments to make the switch, consumers could switch en masse without the need for one-by-one diet advocacy.

We also have sophisticated plant-based foods that, while molecularly distinct from animal flesh, match its taste, texture, and nutritional profile, with a blend of plant ingredients such as pea protein and coconut oil. Availability of these foods — brand names include the Impossible Burger and Beyond Sausage — has already [expanded](#) across North America.

Many consumers already can’t tell the difference between these veggie foods and their animal-based alternatives, and of course the former will continue to be improved year after year, and their price to drop. Just as clean energy includes a variety of ethical energy sources, such as the sun and the wind, the term “clean meat” can be used to include all slaughter-free meat, whether made from plants or from animals.

As I argue in my new book [The End of Animal Farming](#), these advances change the battlefield for the vegan movement. No longer will people need to switch out steak for mushrooms, or chicken breast for pinto beans. Instead, they’ll keep eating the foods they want, just without the harm to animals.

Of course, it would be great if people did switch to a whole-foods, plant-based diet, but I think that most people just aren’t willing to make that lifestyle change. Maybe they will in a few decades.

Given the vast inefficiency of making meat from animals — it takes [over ten calories](#) of plant-based food to produce one calorie of animal-based food — it seems like clean meat’s becoming cheaper than conventional meat is a matter of when, not if.

The vegan movement should reorient itself over the next decade, switching its primary focus from promoting a vegan lifestyle to promoting the widespread adoption of these new foods. The end of factory farming depends on it. The Impossible Burger is [outselling](#) conventional burgers in many of the restaurants where it’s served, and White Castle, Costco, and other major chains have been tripping over themselves in a race to carry these products.

This doesn't mean there is no place for moral advocacy. Public outrage at animal agriculture is what ignited demand for these new products, and it will continue to do so. But it's a matter of proportion. Today vegans have done so much moral advocacy that few people question *why* they should eat more plant-based foods. It is now more a matter of *how*, and for that, clean meat is the most promising answer.

It's unbelievable how far attitudes have advanced. In a survey my colleagues and I conducted in 2017, we saw that [87 percent of U.S. adults](#) believe that "farmed animals have roughly the same ability to feel pain and discomfort as humans." A full 47 percent agree with the statement "I support a ban on slaughterhouses."

[COMMENTS](#)

These figures may sound unbelievable when contrasted with the less than 5 percent of U.S. adults who are vegetarian, but that's exactly the issue: Social change happens first through changes in institutions and public opinion, not through millions of people changing their consumption patterns one by one. We see this in survey results about views of vegetarianism. Despite all of their concern for farmed animals, a whopping 97 percent of people agree with the statement "Whether to eat animals or be vegetarian is a personal choice, and nobody has the right to tell me which one they think I should do."

The vegan movement must become the clean-meat movement. Moving away from the "Go vegan!" message is an uncomfortable process. Many activists have spent decades focused on persuading people, one by one, to change their diet. Fortunately, many vegans are now stressing institutional change. They are working to improve the animal-free products that are available to people, persuade companies to adopt meatless Mondays, help the government formulate regulations that support technological innovation, and encourage a society-wide trend toward the end of animal farming. They are making this switch because ultimately they want what's best for the animals and for the planet.

Jacy Reese is the author of [THE END OF ANIMAL FARMING](#) and the research director at Sentience Institute



Please conserve our natural resources, think twice before you print this e-mail.

From: [Louisa Burwood-Taylor](#)
To: [Andy Brudtkuhl](#)
Subject: EXCLUSIVE! First-Ever Israel AgriFood Tech Funding Report: 2014-2018
Date: Tuesday, March 19, 2019 11:01:28 AM

Hello,

AgFunder just released the inaugural [Israel AgriFood Tech Startup Investing Report](#) in collaboration with our report partner Start-Up Nation Central.

In this five-year review of Israeli agrifood tech startup investment activity between 2014 and 2018, we detail \$759 million of investment across 278 deals. While the totals may appear low next to the \$17bn invested in agrifood tech in 2018, for a country the size of the US state of New Jersey, these figures are impressive. There are many macro and micro reasons for this level of innovation, and the outsized traction Israeli startups get on the world stage, making it an important market to watch

A combination of farming background, world-class agronomic institutions, experience with modern military-grade data, imaging, and aerial technologies all drive Israel's agrifood tech scene. Many company founders grew up on a kibbutz (pioneer farming communes), endowing experience that leads to on-farm solutions tailored for farmer ease-of-use, and to networks for facilitating trials.

For these reasons, Israel has naturally had an edge in agricultural innovation – and has produced some of agtech's most mature and hi-tech farm technologies. Now the country is starting to produce leading food technologies, with particular strength in cultured meat and novel ingredients.

There is also a lot of local support for innovation including organizations like Start-Up Nation Central that are fostering innovation in a variety of industries. Because tech is a major export item, essential to the national economy especially in lieu of natural resources, the Israeli government invests in incubator programs and trials, in partnership with Israeli VCs, food corporates, academic institutions, and farmers.

Key insights from the report include:

- nearly \$1 billion of exits across the supply chain
- a dominance in upstream technologies, particularly Farm Management Software, Sensing & IoT that raised \$208m during the period.
- an active early-stage investment community, particularly the country's connected angel investor network
- 82% year-over-year growth in investment downstream, particularly retail technologies
- active strategic investment from global tech players and agribusinesses

Find out more about the key deals and investors driving Israel's trailblazing agrifood startup sector here:

[Download the FREE 43-page report here](#)

If you have questions or input on the report, please reply to this email or email Shmuel

Rausnitz at Start-Up Nation Central [here](#).

Louisa Burwood-Taylor, Head of Media & Research, and the AgFunder team

About AgFunder

AgFunder is an online Venture Capital firm investing in the bold and exceptional entrepreneurs transforming our food and agriculture system. Our in-house technology enables us to invest globally and at scale, make better investment decisions, and supporting our portfolio companies. Through media and research, AgFunder has built a community of over 55,000 members and subscribers, giving us the largest and most powerful network in the industry.

Stay up-to-date with AgriFood Tech Startup news, and other reports, by signing up to our newsletter [here](#).

About Start-Up Nation Central

Start-Up Nation Central is an independent non-profit that builds bridges to Israeli innovation. We connect business, government, and NGO leaders around the world to Israeli innovation; we help develop technological sectors with high-growth potential; and we accumulate knowledge and generate in-depth insights about Israel's innovation sector.

Find out more [here](#).

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From: [Morris, Keri K \[AN S\]](#)
To: ["animalagtank@iastate.edu"](#)
Cc: [Lawrence, John D \[VPEO\]](#); [Colletti, Joe P \[AEX S\]](#); [Acker, David G \[AEX S\]](#); [Robison, Daniel J \[AGLS\]](#); [MacDonald, Ruth S \[ESHNA\]](#); [\(b\) \(6\)](#); [Rich Degner](#); [Jamee Eggers](#); [\(b\) \(6\)](#); ["ans_department@iastate.edu"](#); ["Ans_retirees@iastate.edu"](#)
Subject: Think Tank March 26 - Register today!
Date: Tuesday, March 12, 2019 5:45:23 PM

You are invited to a Think Tank Meeting

Date:

Tuesday, March 26th, 2019

Time:

Social 6:00-6:30 p.m.

Dinner: 6:30-7:00 p.m.

Program: 7:00-8:00 p.m.

Where:

Jeff and Deb Hansen Agriculture Student Learning Center, 2508 Mortensen,
Ames

Who:

Dr. James Reecy, Professor of Animal Science; Associate Vice President for
Research

Dr James Dickson, Professor of Animal Science, Professor in Charge, Food Safety
Consortium

Dr. Stephen Sapp, Professor of Sociology

Dr. Rodrigo Tarte, Assistant Professor of Animal Science and Food Science and
Human Nutrition

Title:

"Cell-cultured Meat: Current status, future prospects "

The discussion will open with an overall introduction to the history, basic background, and development of cultured meats. Then, the scientists will focus the discussion to 1. technology of cell cultured meats, 2. regulatory, naming, and labeling issues, and 3. social and consumer issues. Bring your questions and concerns to examine the future of the meat industry.

Please register your attendance by clicking on the link below by Noon on Friday, March 22nd, 2019. <https://isuanimalscience.typeform.com/to/tcJDtK>

* Next Think Tank Meeting: Interaction with the Animal Agriculture Commodity Groups at the Iowa Cattlemen's Building on April 30 at 6 p.m.

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From: [theporkwire](#)
To: [i](#)
Subject: Will Fake Meat Take Pork's Spot In The Meat Case? / Protecting the sanctity of meat, Missouri cracks down on soy burgers
Date: Thursday, August 30, 2018 1:28:12 PM

Will Fake Meat Take Pork's Spot In The Meat Case?

Sara Brown

There's a stealth competitor stealing space at the grocery meat counter—and in the packaged meal freezer, on menus at restaurants across the country and on consumers' plates. No, it's not beef or chicken, although they are competing heavily. It's alternative, plant-based and, potentially, lab-grown animal cellular proteins.

U.S. sales of plant-based proteins totaled \$553 million in 2012, according to Mintel, a market research group. In just five years, plant-based protein sales have jumped to \$670 million in the U.S. in 2017. Compare that to the \$22 billion U.S. pork industry, and there is a growing cause for concern.

The alternative protein segment "is something we are well aware of and something we are focused on understanding—especially the composition of the product," says Jarrod Sutton, vice president, domestic marketing for the National Pork Board (NPB). Sutton says the questions he and others at NPB are trying to answer include, "What's in it, how does it become processed into a consumable good, what's the nutritional content and the carbon footprint?"

While it's too early to know what these new proteins will do to pork's market share of the plate, Sutton says you only need to look at the dairy industry and the number of dairy-like items in the grocery case to see the potential for lost market share. To thwart that, NPB is evaluating many avenues of the new segment to keep pork in a competitive position alongside these new competitors.

"There is no doubt the way those products like Beyond Meat and the Impossible Burger are being merchandized—they're targeting meat eaters, not non-meat eaters," Sutton says. "And they are certainly very public about their efforts to erode the business of existing protein suppliers."

Who Oversees and Regulates?

Once thought to be light years away from reality, technology has accelerated the [timeline](#) for lab meat production. While, plant-based proteins and protein blends are already on the market, the first lab-grown meat, or protein produced from animal cells without an actual animal, could very

well [be in restaurants by the end of this year](#).

While the Food and Drug Administration (FDA) and USDA [debate](#) about who will regulate this new food system, traditional protein industry groups are researching and responding to the challenges.

On Aug. 23, the North American Meat Institute (NAMI) and Memphis Meats sent a letter to President Donald Trump asking for a meeting with government and industry stakeholders to begin sorting out the regulatory process of this new class of proteins.

“The U.S. is currently the world leader in protein production, including cell-based meats. But we will not maintain that position without regulatory clarity,” the groups say. “After pre-market safety has been established with FDA, USDA should regulate cell-based meat and poultry products, as it does with all other meat and poultry products, applying relevant findings from FDA’s safety evaluation to ensure products are safe, wholesome and properly labeled.”

How Does “Fake Meat” Taste?

Sutton, who has sampled the Impossible Burger and Beyond Sausage at a Whole Foods in Boulder, Colo., says the taste is meat-like. “They have a ways to go in terms of texture,” he says. “The flavor I’d say was close, just because they put [on] a lot of sauces and condiments.”

A consumer trend that might be a win for meat producers is a move toward “clean” labels—ingredients people can pronounce and understand. “When you see animal protein products being merchandized as the ‘original’ protein and 100% pork, those claims are resonating with consumers and fall in line with this clean label imperative,” Sutton says.

And while burgers seem to be the first type of alternative protein products coming to market, sausage and bratwurst items can’t be too far behind.

“What they are touting as far as nutritional value and the environmental impact, I don’t know of anybody who has done the research to really evaluate that yet,” Sutton says.

Battle of Sustainability Claims

While developers of alternative proteins say they can make protein without any impact on the animal, there is a cost associated with industrial production. Arguments are being made on all sides.

Cell-based meat products are meat produced from animal cells in cell culture. “They are an ‘and,’ not an ‘or,’ solution, and the latest in a long history of innovation in American agriculture,” says the joint letter from NAMI and Memphis Meats.

“This good food movement is not a trend, it’s the reality of what our new customer—mainly the millennial—is expecting of us,” says Brett Kaysen, assistant vice president of sustainability for NPB. “There’s no doubt alternative proteins are going to play the sustainability card. It’s the cost of doing business today.”

But pork producers also have a sustainability case to promote. New research from NPB shows

pork producers have made overall continuous improvement in sustainability and environmental stewardship from 1960 to 2015 based on per pound of live weight of pigs produced.

More details are to come from the NPB's report, Kaysen says. "It's a good thing that [consumers] are interested in what they're putting in their bodies. But you and I both know, they're so far removed from the general production practices of how it happens," he adds. "We've got to be smart about how we educate, why what they're eating every day is safe and nutritious, and why they should feel good about it. We have to build trust."

As a scientist, Kaysen says he's watching closely what ingredients are going into alternative protein products and how they will be identified on the product label.

"We are getting ahead of the power curve and doing some research in the space of comparing nutrient value and nutrient density value of a fake meat versus pork, because there are still a lot of unknowns," Kaysen says. "But we also can't bury our heads in the sand as producers and say, 'That'll never work.' That's not a good strategy."

Protecting the sanctity of meat, Missouri cracks down on soy burgers

Rex Huppke

Let's talk about the sanctity of meat.

Not the actual animal flesh, but the term itself: meat.

It used to be a fairly straightforward word, but it has gotten all mucked up by food makers operating under the merciless green thumb of Big Vegetarianism.

There are products labeled "meat" that are actually made of decidedly nonmeat things like soybeans or lentils or nuts. Just type "meat replacement" into your Amazon search bar and you'll find products with names like: Beef (Not!); Patty Up — Gourmet Meat Alternative; Meatless Meatballs; and Meatless Crispy Chick'n Patties.

I've long said that calling anything made of tofu a "meat" is a crime that

should be punishable by a \$1,000 fine and up to a year in prison. So you can imagine how thrilled I was to learn that our neighbors in Missouri have criminalized meat misidentification, making it punishable by a \$1,000 fine and up to a year in prison.

Seriously.

The law went into effect Tuesday. It makes it illegal for food-makers to use the word “meat” to describe any kind of plant-based product. The only things that can be called meat are products “derived from harvested production livestock or poultry.”

That’s technically discriminatory against cannibals, but I’ll leave advocates of the Humans Are Meat movement to fight their own battles.

What’s important is that we immediately round up all of Missouri’s meat liars and lock them in prison so innocent consumers will never again have to worry about accidentally buying nonmeat meat.

The law is presented as a means to protect consumers like you and me, lest we inadvertently ingest meat-masquerading vegetables. While Missouri is the first state to regulate the word “meat,” the U.S. Cattlemen’s Association filed a “Petition for the Imposition of Beef and Meat Labeling Requirements” with the U.S. Department of Agriculture earlier this year, hoping for federal word regulation.

The petition addresses not only plant-based meat impostors but also the evolving field of lab-grown meat: “USCA has learned that some major U.S. meatpackers and companies in other countries are heavily investing in creating alternative products that may resemble in appearance and taste beef products, including synthetic ‘beef’ and ‘beef’ grown in laboratories using animal cells, known as ‘in vitro’ meat, ‘bio meat,’ ‘clean meat,’ or ‘cultured meat.’ Such products, which are not derived from animals born, raised, and harvested in the traditional manner, should not be permitted to be marketed as ‘beef,’ or more broadly as ‘meat’ products.”

If my local grocery store starts selling lab-generated Frankenmeat, it darn well better not be called meat. I want that bio meat nonsense clearly labeled “Laboratory Protein Mush” or “Edible (Not!)” or “Unholy Blech Patties.”

As the Missouri law suggests, consumers like me can’t possibly be expected to tell the difference between actual meat and products that use the word “meat” in their names while also clearly denoting that they are plant-based. When I grocery shop, I simply grab things that vaguely resemble what I’m looking for and toss them in the cart. (That explains why visitors routinely ask why the sour cream I serve tastes like vanilla yogurt.)

But, of course, the meatless crowd isn’t willing to let a perfectly sensible law stand.

A group called the Good Food Institute joined with the Animal Legal Defense Fund, the American Civil Liberties Union of Missouri and “plant-based meat powerhouse Tofurky” to sue the the state of Missouri, claiming the new law “infringes on the First Amendment” and denies “fair and honest competition in the marketplace.”

A statement from the Good Food Institute claims that “the Missouri law’s explicit aim is to protect current meat producers from competition from plant-based and clean meat companies.”

Well, yes, that sounds like a reasonable suspicion.

The statement goes on to say that consumer protection isn’t the true motivation for the law: “Indeed, the Missouri consumer protection agency has no evidence that consumers are confused by the labels of plant-based products.”

But is a lack of evidence that any problem actually exists and a mild First Amendment violation really enough to justify doing away with a law that might keep me from accidentally eating a meat patty made of cooked wheat gluten?

I think not.

I encourage all states to follow Missouri's brave lead in eradicating the scourge of meat confusion.

And then please do something about so-called "fruit leather." I thought I was buying a belt and now my waist is covered in ants.



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Please feel free to forward this to others who you think will benefit from having this information

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From: [Dave Pyburn](#)
To: [Jason Menke](#); [Jarrod Sutton](#); [Kevin Waetke](#); [Bill Even](#)
Subject: Re: Help to Make Cell-Based Meats a Reality
Date: Tuesday, November 13, 2018 12:29:22 PM

I am going

Sent from my Verizon, Samsung Galaxy smartphone

----- Original message -----

From: Jason Menke <JMenke@pork.org>
Date: 11/13/18 12:07 PM (GMT-05:00)
To: Dave Pyburn <dpyburn@pork.org>, Jarrod Sutton <jsutton@pork.org>, Kevin Waetke <kwaetke@pork.org>, Bill Even <BEven@pork.org>
Subject: FW: Help to Make Cell-Based Meats a Reality

They want us to come. We should think about sending someone.

Jason

From: Jonathan Kilby-Phillips <sponsor@hansonwade.com>
Sent: Tuesday, November 13, 2018 11:03 AM
To: Jason Menke <JMenke@pork.org>
Subject: Help to Make Cell-Based Meats a Reality

Hi Jason,

Taking place in San Francisco this February 5-7, the [Industrializing Cell-Based Meats summit](#) will unite industry leaders to overcome the issues preventing cell-based meats from fulfilling their potential and becoming a mainstream solution to global warming.

This is your opportunity to hear from, talk to and network with, the world's leading minds from industry and academia to bring cell-based meat products to market more quickly.

[Download the Full Event Guide.](#)

Why we're so excited:

- Learn how to navigate the ever-changing regulatory landscapes with **FDA and USDA** experts to speed up commercialization
- Share views on the much debated topic of naming and labelling with pioneers **Kristopher Gasteratos and Paul Shapiro** to maximise cell-based meats' selling potential
- Understand fat culturing methods with **Mark Post of Mosa Meat** to improve the taste of cell-based meats
- Explore what is expected for cell-based meats in other parts of the world with **Integriculture CEO Yuki Hanyu** to ensure cell-based meat products have global reach

[Get in touch](#) and we can put some time in the diary to discuss this in more depth.


Kind regards,
Jonathan

Jonathan Kilby-Phillips
Commercial Director
Hanson Wade



www.industrializingcellbasedmeats.com

Should you no longer wish to receive emails sent to jmenke@pork.org from [Hanson Wade](#) about this or other events please [Click Here](#)
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Please conserve our natural resources, think twice before you print this e-mail.

From: [Bruce Friedrich](#)
To: [Laura Bachmeier](#)
Subject: Here's what you need for The Good Food Conference livestream.
Date: Thursday, September 6, 2018 10:50:20 AM






Hi Laura,

Thank you for signing up for The Good Food Conference Livestream. Today is the day!

We've got a phenomenal lineup of world-class speakers discussing the future of food and innovation in the plant-based and clean meat industries over the next two days. [Check the schedule](#) to make sure you tune in for the sessions that interest you most, and join us in thanking our [incredible sponsors](#) for making the conference a reality!

You can ask questions of the panelists and participate in real-time audience polls on [Slido](#). Use event code #GFC18 to find us and join the conversation! Chime in on social media with [#GoodFoodConference](#).

LIVESTREAM NOW



And since I'm betting you're the learning-type, you might be interested in some of the new resources we're rolling out at the conference. (Just some light bedtime reading!) Check out:

The Good Food Startup Manual: Dig into this all-you-can-read buffet on planning, launching, and growing a good food business.

Plant-Based and Clean Meat MOOC: Enroll in our free online course exploring the science behind scalable alternatives to animal products.

Competitive Research Grant Program: Funding is available for critical plant-based and clean meat research. Apply!

An Ocean of Opportunity Action Paper: Download our new whitepaper on opportunities to advance the development of plant-based and clean seafood.

If you're still hungry for more on plant-based and clean meat, explore our **2017 Year in Review** to see what GFI has been getting done, all powered by the gift support of our family of donors worldwide. (Thank you!) You might even want to watch **my TEDx talk** on how we can create a sustainable food system with market forces and food technology.

But right now, it's showtime for The Good Food Conference! Thanks for tuning in! We'll see you on Slido.

Cheers,



Bruce Friedrich
Co-Founder & Executive Director
The Good Food Institute

P.S. GFI's team of scientists, entrepreneurs, innovators, and policy experts is powered entirely by philanthropy. If you'd like to make a gift to accelerate the new future of food, you can do so **here**.

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Sent by innovate@gfi.org

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From: [Dave Pyburn](#)
To: [Chris Hostetter](#); [Cindy Cunningham](#); [Bill Winkelman](#); [Bill Even](#); [Jarrod Sutton](#); [Kevin Waetke](#); [Mike King](#); [Steve Larsen](#); [Laura Bachmeier](#); [John Johnson](#)
Subject: Lab Meat
Date: Monday, December 17, 2018 8:06:55 AM

Source: Kadence International

11.26.2018

By [MEAT+POULTRY Staff](#)

NEW YORK – The willingness of US consumers to try meat products produced using non-traditional methods, is significantly lower compared to countries in Europe. According to the findings of a study by [Kadence International](#), so-called clean meat or lab-grown meat isn't on the wish lists of American adults. According to the research, about 17 percent of US consumers were familiar with clean meat, which is defined by Kadence as lab-grown meat made from miniscule muscle fibers and is designed to reduce the impact of meat production on animals and the environment.

The study, which included a sample size of 2,000 US adult consumers, concluded that 27 percent of respondents indicated they would likely purchase clean meat. Kadence states that about 66 percent of US consumers would be willing to try lab-grown meat compared to 75 percent of consumers in Belgium or the Netherlands. Thirty-six percent of US consumers indicated clean meat is appealing, however 20 percent believe it will help the environment.

"US adults, especially the younger generation, are becoming more concerned with where their food comes from and the effect it has on the environment," said Miriam Konz, managing director at Kadence International.

The research found that an increasing number of US consumers admit to eating meatless dinners more often, including the 40 percent that stated they eat a meatless meal at least weekly. No conclusions were made as to whether lab-grown meat would constitute a meatless meal in the minds of those consumers.

"There may be many reasons for this, but currently it seems that there is a skepticism regarding clean meat within the US," Konz said. "Many consumers question the taste/texture and are uncertain about the positive effects on the environment and claims that clean meat is more humane for animals."

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KEYWORDS [CONSUMERS](#) [ENVIRONMENT](#) [MEAT](#)

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Email: DPyburn@pork.org

Please conserve our natural resources, think twice before you print this e-mail.

From: [Rick Berman](#)
Subject: Dairy: A Case Study for Fake Meat
Date: Friday, March 22, 2019 3:16:02 PM

I thought you might be interested in our latest piece on the fake meat debate.

-Rick

[Dairy: A Case Study for Fake Meat](#)

Drovers | [Will Coggin](#) | March 22, 2019 08:45 AM

The opinions in this commentary are those of Will Coggin, the managing director of the Center for Consumer Freedom.

To say that history often repeats itself is an understatement when it comes to the plant-based foods revolution. Identity crises, labeling issues, and spats with technology abound. For everyone uncertain about what the future will hold for meat as it squares off against plant-based and laboratory-cultured alternatives, look no further than what happened to dairy.

For a long while, the milk industry didn't take the market threat posed by soy and other plant-based milks seriously. As historian Nadia Berenstein puts it, soy milk was "the food equivalent of a hairy-legged gal in Birkenstocks: joyless and unappealing to most people, but there was always a niche of enthusiasts who couldn't get enough." So when sales for plant based milks began to climb in the late 2000s, dairy producers dismissed the growing popularity as a fad.

Yet in the intervening years, plant-based milks proved their staying power. With an almost \$2 billion domestic market, soy, almond, and other plant-based milks now make up 13 percent of all milk sales in the U.S. They're a staple in mainstream grocers, occupying valuable shelf space once solely belonging to dairy milk.

The small faction of dairy farmers who saw the writing on the wall decided that the milk wars could be won through labeling. By forcing their competitors to call the non-dairy products "almond beverage" or "soy drink," dairy farmers believed that consumers would stop seeing them as a substitute for cow's milk.

The labeling campaign sparked a 20-year effort to convince the Food and Drug Administration

to enforce its formal definition that milk is “the lacteal secretion, practically free from colostrum, obtained by the complete milking of one or more healthy cows.” With the exception of an acknowledgment from outgoing FDA administrator Scott Gottlieb that “an almond doesn’t lactate”, milk producers have made little progress on the labeling front. Yet even if cow’s milk had been the only “milk” so labeled, the war of words still failed to address the root of shifting consumer preferences.

Just look at margarine, a butter alternative made from vegetable oil. At the behest of the 19th century dairy industry, 32 states prohibited companies from dying margarine yellow, lest it resemble butter. Federal rules stipulate that companies can’t call margarine butter, either. Yet it was margarine’s own failings, a high trans fat content and lack of continuity with the “natural” movement, that ultimately made the spread fall out of favor--not its color or the fact that it can’t be sold as “vegetable butter.”

For a long while, the dairy industry doubled down on labeling when it could have acknowledged that one in five Americans were consuming less dairy for health reasons. Now, several decades later, milk makers are starting to catch on. Value-added milks, like ultra-filtered Fairlife, A2 milk, and Amazon’s new Happy Belly brand, are easier on the stomach for those who suffer discomfort when drinking regular milk. This category, along with organic and grass-fed milks, are the only products bucking the current downward trend in milk consumption (or at least not shrinking as quickly).

Unfortunately, it’s too late for milk to completely regain the lost ground. Plant-based milks are expected to add another \$1 billion to their market share by next year, whereas sales of dairy milk are expected to drop another \$2 billion by 2020. According to the U.S. Department of Agriculture, more than half of U.S. dairy farms have closed since 2000, dropping from more than 83,000 to roughly 40,000.

To make matters worse, the remaining dairies will have to contend with laboratory milk, produced with modified yeast in much the same way that we make medical-grade human insulin. The Silicon Valley startup, Perfect Day, has already teamed up with Archer Daniels Midland to bring the world’s first cow-free dairy proteins to market this year.

Anyone following the fake meat saga can recognize the parallel trends.

Like the dairy industry, the hallmark of most meat producers’ reaction to this new generation of plant-based burgers and sausages has been to treat them as a small nuisance; no different from the bland, rubbery Tofurky of generations past.

In a fashion similar to dairy, meat producers are taking up labeling and standards of identity as their primary defense. At the urging of the National Cattlemen's Beef Association, seven states have adopted or are considering a ban on marketing plant-based foods as “meat”, with several states preemptively defining lab-grown meat out of existence.

The strategy betrays a patent misunderstanding of what’s driving plant-based meat sales: The simple availability of a food that allows consumers to make what they perceive to be a healthier, more ethical choice without sacrificing taste. That perception is driven by one-sided reporting and advocacy from trade groups such as the Good Food Institute (which is, incidentally, headed by an ex-VP of PETA).

Yet here, too, the plant-based options have an Achilles heel. Their heavily processed, lengthy ingredient list is out-of-step with consumer demand for whole, natural products.

Soy protein is often the favored ingredient for plant-based meat manufacturers attempting to mimic the texture of meat. However, the extrusion process through which the protein is separated from oil involves heavy processing with industrial chemicals. The final products are also very often high in salt, added sugars, and flavoring in order to make them palatable.

When you consider that 69 percent of consumers prefer their food be free from artificial ingredients, plant-based foods have a clear weakness.

Right now, plant-based meat products are benefitting from an undeserved health halo. The meat industry should be broadly focused on presenting their products as value-added while marketing specifically to fake meat’s failures. For example, leading pork producers have worked to reduce the number of ingredients in their sausages and bacon--given current consumer trends, that asset should be highlighted against the lengthy ingredient list of a Beyond Sausage or Beyond Burger.

This failure to focus on countering the false health halo is one reason that will lead to a decline hitting the meat industry. Consider that plant-based food sales are up 13 to 19 percent in every U.S. census region, with the Southeast leading the pack.

If meat continues down the path traveled by dairy, the next chapter will be hard to swallow: Widespread closure of cattle farms, hog farms, and poultry farms, consolidation, and the ultimate loss of jobs and livelihoods for those working in animal agriculture. That’s not a future anyone should aspire to. And sadly it could easily be prevented.



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From: [Claire Masker](#)
To: [Brandon Gunn](#)
Cc: [Kevin Waetke](#); [Brett Kaysen](#)
Subject: RE: Raising Meat Summit: Gina Asoudegan, Kristopher Gasteratos, and Leah Gibson
Date: Friday, March 22, 2019 2:16:49 PM

Hi Brandon,

Thanks so much!

From: Brandon Gunn <bgunn@texaspork.org>
Sent: Friday, March 22, 2019 12:58 PM
To: Claire Masker <cmasker@pork.org>
Subject: Re: Raising Meat Summit: Gina Asoudegan, Kristopher Gasteratos, and Leah Gibson

Hey Claire,

That looks very interesting; I would like to attend. I cannot be there Sunday but I looked at the agenda and it doesn't really start until Monday morning, so that should work great for me.

Brandon R. Gunn
Executive Vice President
Texas Pork Producers Association
(b) (6) c
512.262.0595 o

On Friday, March 22, 2019, 10:50:22 AM CDT, Claire Masker <cmasker@pork.org> wrote:

Hi Brandon,

Would you be interested in attending this event? We would cover your expenses.

Thanks!

Claire

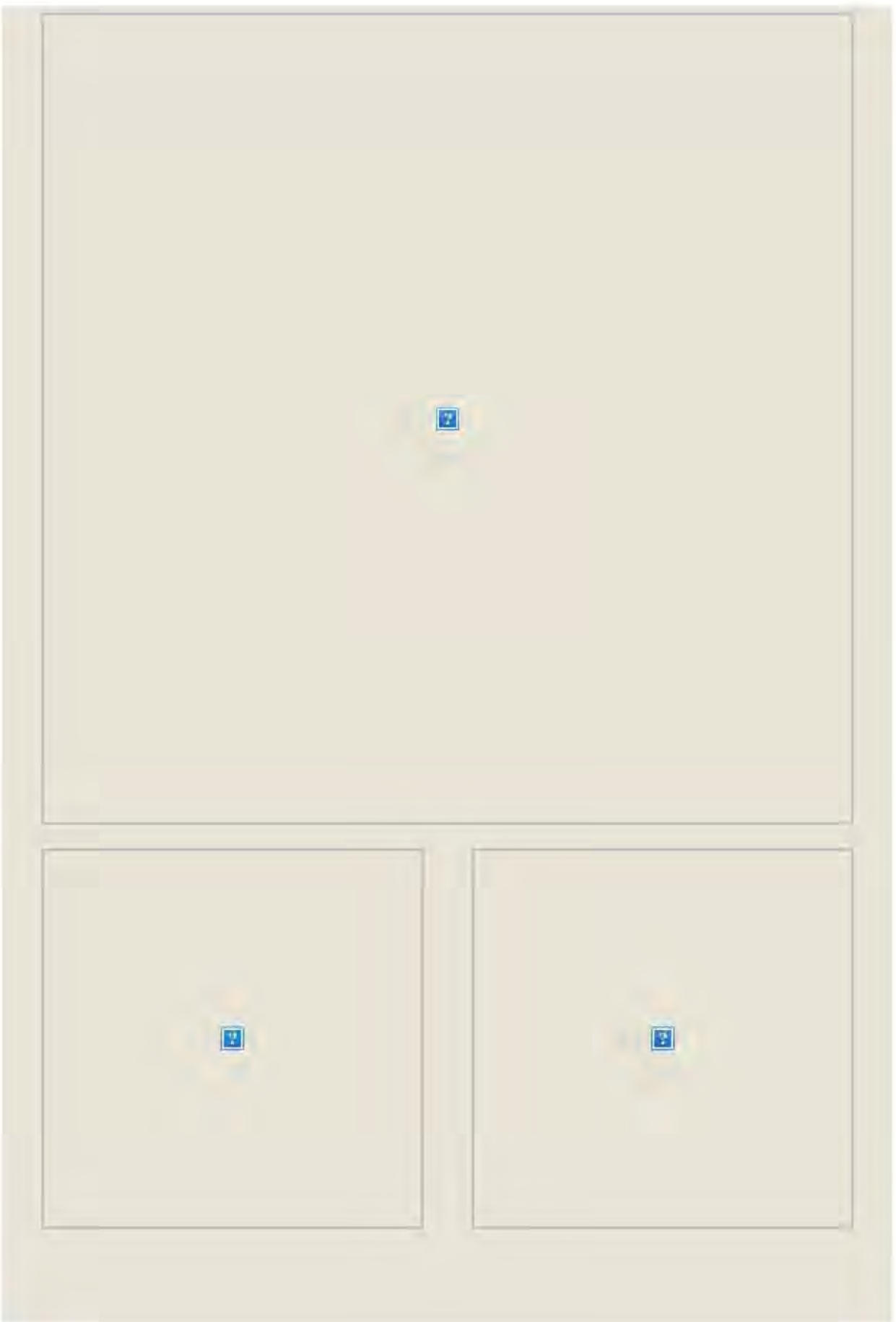
From: Kate Cox, Editor <hillary.bonhomme@newfoodeconomy.org>
Sent: Wednesday, March 20, 2019 11:04 AM
To: Steve Weiss <steve@nutriquest.com>
Subject: Raising Meat Summit: Gina Asoudegan, Kristopher Gasteratos, and Leah Gibson

[View this email in your browser](#)



Dear Reader,

Last week, we explained why you won't want to miss Sara Place, Jeff Tripician, and Richard McCarthy in action at our Raising Meat Summit. ([Here's our guide](#) to those speakers and their programs, if you missed it.) But there are a few other names we think you'll want to know more about before we land in Texas on March 31st...



In addition to Sara Place, the morning's first panel will also feature **Kristopher Gasteratos**, Founder and President of the **Cellular Agriculture Society** (pictured bottom left). We're thrilled to have Gasteratos sharing his perspective on the future of meat in the 21st century, which has been informed by his years of experience conducting market research related to the emerging cell-cultured meat industry.

Following that discussion, **New Food Economy** Features Editor **Joe Fassler** will moderate a panel on animal husbandry—moving beyond welfare considerations to the larger implications of what it means to work with animals for a living. He'll be joined by **Texas A&M** Professor and Extension Meat Specialist **Dan Hale**; **Ariel Greenwood**, Co-Owner and Operator of **Grass Nomads**; **Greg Gunthorp**, Owner at **Gunthorp Farms**; and **Leah Gibson** of the **Central Texas Meat Collective** (top center). A producer of pork and poultry, Gibson helps the collective offer butchery, cooking, and curing classes that educate Texans about the realities of meat production.

In the afternoon, **Gina Asoudegan**, **Applegate Farms'** Vice President of Mission and Innovation (bottom left), will talk sustainability, scale, and branding with **Slow Food International's** **Richard McCarthy**.

[This is just the start of what you can expect at our upcoming Raising Meat Summit. Check out our Eventbrite to learn more about speakers, topics, and presentations—we hope to see you there!](#)

[AGENDA + TICKET DETAILS HERE](#)

Got questions? Want to get involved? Contact Hillary Bonhomme:
hillary.bonhomme@newfoodeconomy.org.

See you in Texas.

The New Food Economy



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From: [Adria Huseth](#)
To: [Dave Pyburn](#)
Subject: FW: OK, now what? Next steps in regulating cell-based meat products.
Date: Tuesday, March 19, 2019 4:15:28 PM
Attachments: [image002.png](#)
[image003.png](#)

... FSIS Administrator Carmen Rottenberg, on next steps in regulating cell-based meat products

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By [Julie Larson Bricher](#) on 3/19/2019

Earlier this month, the USDA and the Department of Health and Human Services [unveiled the framework](#) for how FSIS and FDA will divvy up the duties of regulating the nascent cell-based meat industry in the United States.

But what are the *next* steps?

Julie Larson Bricher, *Meatingplace*'s science and technology editor, quizzed **FSIS Administrator Carmen Rottenberg** on behalf of **The Analogue Dish** about what's on the horizon for this much-talked-about technology.

Analogue Dish: Does FSIS and FDA have a projected timeline for working out the details for how the process will work, now that jurisdiction has been established in this agreement?

Rottenberg: There's a lot that we still don't know about the product and the processes that are used to produce it, and that's due in large part to industry players in this space not having scaled up production yet.

So, the first step is this agreement. It's a formal agreement because both agencies have distinct regulatory authority, but neither agency needs additional authority in order to regulate the product. So, the first step for the producer that would be interested in making these cell-based meat

products for consumers would be to obtain a grant of inspection. And that's what we lay out in the formal agreement.

AD: Obviously, a hot button topic is labeling. A lot of the industry groups touched on this after the agreement was announced, about how the agencies are going to develop joint principles for the product labeling and claims. FSIS is now formally in charge of pre-market labeling authority, right?

Rottenberg: It absolutely is. I envision that there will be a new standard of identity for these food products that are derived from the cells of livestock and poultry. Our standards of identity are currently captured in the FSIS policy books, which is online. But this is a new product that would require a new standard of identity. And so, internally, at USDA, we're having a conversation. And our policy team is looking at what we might propose it be called, and that would be a public process where we would want our stakeholders to comment.

AD: One of the things I noticed in the National Cattlemen's Beef Association response to the announcement was that they were looking forward to working collaboratively with the agencies on next steps. How will industry have the opportunity to weigh into that process?

Rottenberg: I think the labeling piece will be a piece that we will need to seek their involvement in. As you know, we held a joint public meeting in October, and the second day of that public meeting was really focused on labeling, both labeling authorities and special claims. We heard from stakeholders with a lot of different ideas what the product should be called, and we had comments submitted in connection with that public meeting.

I think there will be another opportunity in which the agency will propose a standard of identity and then stakeholders will have an opportunity to comment. We will carefully consider those comments before coming to an agreement on standard of identity.

There could be other opportunities for notice and comment rulemaking. But, at this point, I look at this as these are going to be processing establishments that are just like processing establishments that we currently regulate.

As you know, in our processing establishments there are other ingredients and additives that go into products that we regulate, and the safety of the additives and other ingredients is determined by FDA. And at USDA, we are determining the ingredients' ability for use in the meat and poultry products. So, I think that the same principles of sanitation and food safety will apply at these processing facilities. And we'll be there to regulate that whenever the producer is harvesting

products.

AD: As far as sort of a timeline goes, every week it seems somebody runs an article saying, ‘in a month, in a week’ these products will be on the shelves. But that doesn't sound right to me.

Rottenberg: You are absolutely right. I was on a panel with Memphis Meats CEO Uma Valeti ... at the USDA Agricultural Outlook Forum. He indicated that they're still working out scaling up production. I think he said that they probably were a couple years out from having products ready to hit the grocery stores. And all we can do is take their word for it.

It seems like there are a lot of steps that these companies have to go through in order to scale up their products. And also, the agreement lays out what FDA rules will be, in terms of the pre-market approval and the approval and oversight of the cell lines. They have the same questions we do about what's happening in the bioreactor when the cells are being grown and what they're being fed. There's just a lot on the science side that we just don't know about the products yet, but this formal agreement really, clearly lays out how the agencies are going to move forward.

How we're going to move forward at FSIS is, we have a company that is interested in producing and selling the product, and they will need to obtain a grant of inspection. We will treat them like other processing facilities.

AD: I noticed that two people were named liaisons: Jeremiah Fasano at FDA (Consumer Safety Officer, Division of Biotechnology and GRAS Notice Review, Office of Food Additive Safety, Center for Food Safety and Applied Nutrition) and Matthew Michael at FSIS (Director, Issuances Staff, Office of Policy and Program Development). Are they the folks at the front lines of coordinating?

Rottenberg: They're both policy guys and they've been working this issue since the agencies first started having conversations about this a year ago. So, they've been our point of contact internally, and we just formally agreed to have them be the liaisons going forward on any additional issues.

AD: This could be a little bit complicated, but if Memphis Meats has said they're still a ways out from their production processes being in place, you guys have some time to figure out all the threads to this web, right?

Rottenberg: We need to know more about the processes and the operations of a facility before they can start producing for our consumers. You know, we've heard rumors of other countries that are fairly far along in creating this product also and so there will be international considerations as well, on imports and making sure that the imported product meets the U.S. government

requirements. That'll be an important step.

Healthy Regards,

Adria Huseh, RDN, LD, CPT

National Pork Board

Manager Nutrition Communications & Research

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www.pork.org/health/

From: news@newsletters.meatingplace.com <news@newsletters.meatingplace.com>

Sent: Tuesday, March 19, 2019 2:18 PM

To: Adria Huseh <ahuseh@pork.org>

Subject: OK, now what? Next steps in regulating cell-based meat products.

March 2019



The editors of Meatingplace are pleased to present this third installment of the new *The Analogue Dish* newsletter. Each month, we cut through the hype to examine the players, the policies, opportunities and competitive threats of the emerging alternative meat category. To subscribe and not miss any of the upcoming newsletters, [CLICK HERE](#)

A conversation with ... Carmen Rottenberg, on next steps in regulating cell-based meat products

Earlier this month, the USDA and the Department of Health and Human Services unveiled the framework for how FSIS and FDA will divvy up the duties of regulating the nascent cell-based meat industry in the United States.

But what are the steps after that? And where does industry come in?

Julie Larson Bricher, Meatingplace's science and technology editor, quizzed FSIS Administrator Carmen Rottenberg on behalf of *The Analogue Dish* about what's on the horizon for this much-talked-about technology.



NEWS BRIEFS

Reciprocal Meat Conference plans deep dive into cell-based

meat science

What's worse than livestock for the environment? It could be lab-grown meat, researchers say

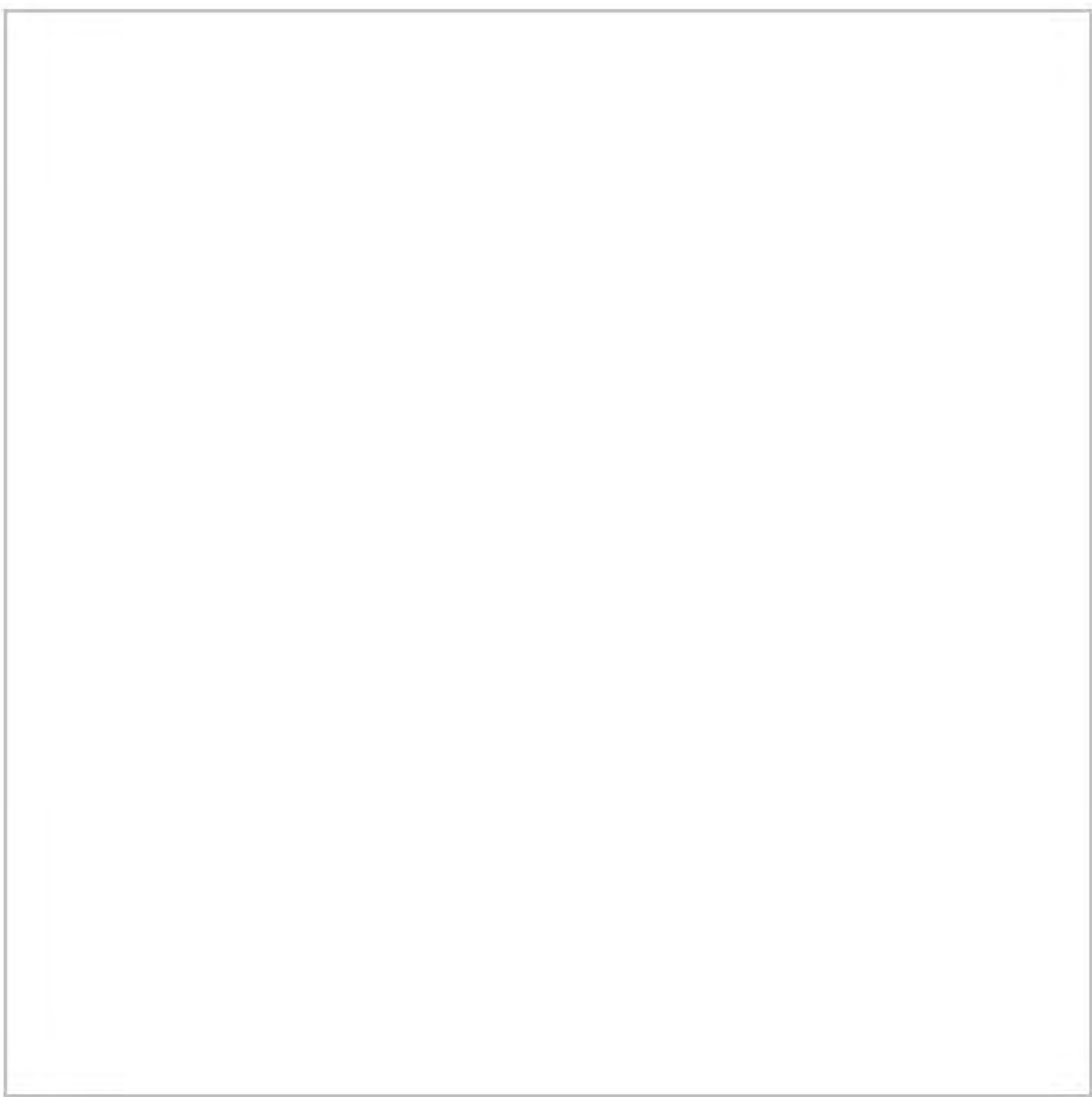
Don Lee Farms ups the ante in case against Beyond Meat

What the what? VEGAN McNuggets?

New product roll call: Strong Roots, Jackfruit, ABP Food Group, Axiom, Chipotle, A&W, MorningStar Farms, Beyond Meat, Atlantic Natural

ICYMI: Another biotech company jumps into alternative protein market

ICYMI: Impossible Foods hires first president



BY THE NUMBERS



Watch your language!

Regulators and legislators are debating the ins and outs of using the word 'meat' on the labels of plant-based meat substitutes, even as some states are making up their own rules. What consumers want, on the other hand, may not be reflected in the debate.

U.K. PR firm Ingredient Communications surveyed 1,000 shoppers in the U.K. and the U.S. through Surveygoo. Most respondents were OK with the word 'meat' on the label of a plant-based meat analogue, but

the percentage opposed varied.

Interestingly, vegans were the most likely to object to even seeing that four-letter word on their products. Vegetarians were the easiest to please, revealing an important difference in communicating to those two target markets.

EDITOR'S NOTE



From OZY: 'Meat' made from electricity and air?

OZY, a news website that bills itself as "what cool people read to be smart and smart people read to be cool," visits Finnish scientists who are exploring lab-grown protein options that are waaaaaay past the idea of lab-grown meat. Could carbon dioxide and electricity be the building blocks of a meat analogue of the future? They make an interesting argument.

"I'm just going to tell you, I don't look at this as voodoo science, because we've had a lot of those cells that we've used within the health industry and the meat industry. They wouldn't grow if they weren't properly functional."

Rhonda Miller, professor of meat science at Texas A&M University, speaking to the National Association of State Departments of Agriculture in February, as quoted in the Agri-Pulse article, "Ready or not, here comes cultured meat."

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Please conserve our natural resources, think twice before you print this e-mail.

From: [Dave Pyburn](#)
To: [Steve Weiss \(steve@nutriquest.com\)](#); [Belk Keith](#)
Subject: FW: Competitive Intelligence: First public tasting of lab-grown sausage - Business Insider
Date: Wednesday, September 19, 2018 8:07:00 AM
Attachments: [image004.png](#)

FYI

Keith, another source to try for sample product.

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From: Jarrod Sutton
Sent: Tuesday, September 18, 2018 9:22 PM
To: Pat McGonegle <pmcgonagle@iowapork.org>; Joe Dykhuis <jdykhuis@dykhuisfarms.com>; Jamie Burr <jamie.burr@tyson.com>; Mark Williams <mwilliams@bader-rutter.com>; Matt Sutton-Vermeulen <(b) (6)>; Jen Sorenson <JSorenson@iowaselect.com>; Gene Noem <GNoem@pork.org>; Dallas Hockman <hockmand@nppc.org>; Bradley Wolter, Ph.D. <bradleyw@pigsrus.net>; Randy Spronk <randy.spronk@spronkbros.com>; Neil Dierks <dierksn@nppc.org>; Andy Curliss <acurliss@ncpork.org>; Koenigs, Mike (MIN-WSW) <MKoenigs@WeberShandwick.com>; Kay Stinson <kay_stinson@seaboardfoods.com>; Garth Boyd <(b) (6)>; Kraig Westerbeek <kwesterbeek@smithfield.com>; (b) (6) Phil Borgic <phil@borgicfarms.com>; Bradley Wolter, Ph.D. <Bradley.Wolter@pigsrus.net>
Cc: Jamie Byrnes <jbyrnes@pork.org>; John Johnson <johnjohnson@pork.org>; Allan Stokes <AStokes@pork.org>; Sara Crawford <SCrawford@pork.org>; Jason Menke <JMenke@pork.org>; Jarrod Sutton <jsutton@pork.org>; Brett Kaysen <BKaysen@pork.org>; Dave Pyburn <dpyburn@pork.org>; Bill Even <BEven@pork.org>; Bill Winkelman <bwinkelman@pork.org>
Subject: Competitive Intelligence: First public tasting of lab-grown sausage - Business Insider

Competitive Intelligence: Angie Krieger, Asst. VP Channel Outreach at the Pork Checkoff, shared the following [Business Insider](#) article regarding the first public tasting of lab-grown sausage. Read through it to better understand how this product will be marketed in the very near future.

For the first time in the roughly five years since a smattering of researchers and companies began talking about making real meat without slaughtering animals, one startup is letting people see how its sausage gets made.

Well, almost.

On Monday evening, the startup, called [New Age Meats](#), let a handful of journalists and prospective investors taste its prototype product — a pork sausage made from many of the same ingredients in the kind of breakfast sausage you'd buy at the store, such as pork muscle and fat, spices, sausage, casing, and vegetable stock.

But unlike other breakfast sausages, this meat was made from animal cells — without killing any animals.

Creating this kind of meat has been the primary objective of [several startups](#) ever since Dutch scientist Mark Post became the first person in the world to make a [beef burger from cow cells](#) in 2013. Since then, [at least six companies](#) have emerged with the aim of slashing food waste and emissions while reducing animal suffering and improving human health.

All of them are working on transforming meat or fish cells into edible flesh.

At a brewery in San Francisco, New Age Meat's team cooked and doled out the first samples of its farm-free ([aka "cell-based" or "cultured"](#)) meat. Here's what it was like.

Sausage without slaughter

On Monday evening, New Age Meats cofounders Brian Spears and Andra Necula served three fresh cooked pork-sausage links made using fat and muscle cells generated from a single sample of a live pig named Jessie (after the street where their headquarters is located in San Francisco).



Pork sausage made from pork fat and muscle cells — no farm required. Katie Canales/Business Insider

The company started just two months ago with \$250,000 in seed funding from [IndieBio](#), the biotech-focused accelerator that also gave cultured-meat startup [Memphis Meats](#) its start.

"We really thought, 'Do we want to invest in another cultured-meat startup?'" Arvind Gupta, IndieBio's cofounder, told Business Insider. "But after we met the team and saw what they could do, we had to."

"This is the most product and the fastest production from any cultured-meat startup we've seen so far," Gupta said. As Spears, a chemical engineer by training, and Necula, a cell biologist, watched, the sausage sizzled in a pan with a little grapeseed oil. Slowly, it began to brown on each side like conventional sausage. The room filled with the smell of breakfast meat. After a few minutes — just before the sausage casing began to blister — we dug into our bite-sized samples. It tasted like meat. Then again, it is meat.

The texture was distinctly sausage-like. After I'd chewed my bite, I wasn't sure I would have been able to tell the difference between this pork sausage and any other. Perhaps it was a little drier, a little more crumbly? It was hard to tell from just

one bite, but I was pretty sure there were no glaring differences.

An uphill battle for the future of meat



New Age Meats cofounders Brian Spears and Andra Necula. Courtesy of New Age Meats

Despite their hard work, Spears and Necula face a long road ahead. Meat made in labs is coming, as most of the startups in the space continue to promise, but getting the products out of the lab and into restaurants will take time.

Back in 2013, when Dutch scientist Mark Post became the first person in the world to make a beef burger from cow cells, the patty [cost \\$330,000 to produce](#). Getting that down to a price consumers would be willing to pay at a restaurant is still at least five to 10 years away, according to several CEOs of the leading companies in the space.

Part of the cost problem has to do with the food these startups are feeding their farm-free animal cells. Many companies still use something called fetal bovine serum (FBS), a standard and relatively inexpensive lab medium made from the blood of pregnant slaughtered cows. To live up to their goal of replacing animal slaughter, these startups will need to find something new and slaughter-free that costs the same or less.



My first bite of cell-based meat. Katie Canales/Business Insider

New Age Meats' sausages were made using FBS, but Spears told Business Insider he and Necula were working on going serum-free within the next couple of months.

Another issue is texture.

Making a sausage, patty, fish cake, or any other product that combines several ingredients with ground meat or seafood is nowhere near as difficult as [mimicking the complex texture and flavor of a steak](#) or a chicken breast. To do that, startups will likely need to take many of their cues from regenerative medicine, where scientists strive to heal or grow real human tissues and organs. Applying those tools to the world of cultured meat could result in the first farm-free products that chew, slice, and taste like a traditional steak or thigh.

For this reason, Necula said she and Spears planned to continue working in the realm of sausage-like items, but they're exploring options that include products made with beef, pork, and crab.

Several other startups appear to be making headway on their first cultured-meat products as well. The CEO of [Just](#), a Silicon Valley startup formerly known as Hampton Creek, recently tweeted a photo that appeared to show a prototype of its first cultured-chicken nuggets; [Memphis Meats](#), the Silicon Valley startup that claimed it made the first lab-grown chicken and duck products in 2017, invited me to a tasting of its products before the year's end.

New Age Meats made history with the first semi-public tasting of its sausage on Monday. "We think we'll be ready to go to market in a couple years," Spears said.

Jarrod Sutton

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Please conserve our natural resources, think twice before you print this e-mail.

From: [Dave Pyburn](#)
To: [Steve Weiss](#)
Subject: RE: Instant Update: NAMI, Memphis Meats offer regulatory suggestions for cell-based meat
Date: Friday, August 24, 2018 8:09:00 AM

They already do:

[Tyson Foods Invests In Clean Meat Startup Memphis Meats | Fortune](#)

[fortune.com](#) › [Retail](#) › [Tyson](#)

Jan 29, 2018 - Meat producer **Tyson** is investing in "clean" or **alternative** meat company Memphis Meats in a move to expand into new forms of **protein**.

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Email: DPyburn@pork.org

From: Steve Weiss <steve@nutriquest.com>
Sent: Friday, August 24, 2018 6:55 AM
To: Dave Pyburn <dpyburn@pork.org>
Subject: RE: Instant Update: NAMI, Memphis Meats offer regulatory suggestions for cell-based meat

Do you think NAMI is presuming that the cultured meat folk will fall under its representation?

From: Dave Pyburn <dpyburn@pork.org>
Sent: Thursday, August 23, 2018 5:38 PM
To: Steve Weiss <Steve@21stforums.com>
Subject: FW: Instant Update: NAMI, Memphis Meats offer regulatory suggestions for cell-based meat

FYI

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Fax: 515-309-5715

Email: DPyburn@pork.org

From: Dave Pyburn

Sent: Thursday, August 23, 2018 5:37 PM

To: NPB Senior Leadership Team <NPBSeniorLeadershipTeam@pork.org>; Liz Wagstrom <WagstromL@nppc.org>; Dan Kovich (<Kovichd@nppc.org>) <Kovichd@nppc.org>

Subject: FW: Instant Update: NAMI, Memphis Meats offer regulatory suggestions for cell-based meat

A Washington lobby group representing the meat sector and a major player in cultured protein development sent a joint letter to the administration Thursday outlining suggested steps in terminology and governance of a technology that has vexed regulators and producers alike in the early days of its growth.

In the [letter](#) sent to the White House, the leaders of the North American Meat Institute and Memphis Meats jointly call on the administration to acknowledge roles for both the Food and Drug Administration and the Department of Agriculture in the regulation of cell-based meat.

The technology – which has been dubbed things like cultured meat, clean meat, and fake meat during the regulatory debate – uses existing animal cells in cell culture to produce meat products. As such, NAMI and Memphis Meats suggest the term “cell-based meat and poultry” as the proper terminology for products of the technology.

The letter also suggests FDA should be charged with ensuring the pre-market safety evaluation of cell-based meat and poultry with USDA input. Once pre-market safety is established, regulatory oversight can be shifted to USDA, which can apply “relevant findings from FDA’s safety evaluation to ensure products are safe, wholesome, and properly labeled.”

“Such a regulatory framework is not new and plays into the strengths and experience of FDA and USDA,” the letter states. “FDA has extensive expertise regarding products produced using cell culture technology and USDA has a longstanding role in inspecting meat and poultry products.”

Mark Dopp, NAMI’s senior vice president for regulatory affairs, tells *Agri-Pulse* this approach has been used before with additives and processes.

“This happens all the time,” he said, using irradiation as an example. “Direct and indirect additives, they’re all approved by first by FDA for food safety purposes. After that, FSIS makes sure that they’re used in the proper form or fashion in USDA federally-inspected establishments.”

“Why would we treat these products – or regulate them any differently – than how ground beef is made or how hot dogs are made or how ham is processed,” he argued. Finally, NAMI and Memphis Meats request a meeting “between the White House, USDA, FDA, and both conventional and cell-based meat and poultry industry stakeholders.”

Thursday’s letter was limited to Memphis Meats, but NAMI CEO Barry Carpenter said the group is open to working with other cell-based manufacturers on similar initiatives in the future. He said talk of such companies becoming members in NAMI may be a little premature, but the organization would be open to it “if they progress and get into making products.” For now, he said it’s important to reach an agreement on regulatory practices.

“Let’s get the safest food we can get in the marketplace and not have products that may be different but look similar in the marketplace have a whole different safety profile,” Carpenter said.

The conversation around the proper regulatory framework for cell-based meat products has been a lengthy one with no real offering of consensus between conventional protein producers and users of the new technology. NAMI previously [signed onto a letter](#) in July calling for USDA oversight of the products. USDA and FDA have even signaled disagreement on the issue; in July, the FDA [held a public meeting](#) on the subject but did not include speakers from USDA. Calls for regulatory scrutiny have typically suggested either USDA or FDA, but this letter calls for a mix of the two as the product develops in the marketplace. FDA is accepting comments on the subject through Sept. 25.

(Story updated at 2:45 pm to include additional NAMI comment.)

For more news, go to www.Agri-Pulse.com

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From: Agri-Pulse Instant Update <sara=agri-pulse.com@mail247.atl171.mcdlv.net> **On Behalf Of**

Agri-Pulse Instant Update

Sent: Thursday, August 23, 2018 11:13 AM

To: Dave Pyburn <dpyburn@pork.org>

Subject: Instant Update: NAMI, Memphis Meats offer regulatory suggestions for cell-based meat



NAMI, Memphis Meats offer regulatory suggestions for cell-based meat

A Washington lobby group representing the meat sector and a major player in cultured protein development sent a joint letter to the administration Thursday outlining suggested steps in terminology and governance of a technology that has vexed regulators and producers alike in the early days of its growth.



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From: [Jarrod Sutton](#)
To: [Jim Murray](#)
Cc: [Bart Goldberg](#) (b) (6); [David Bottagaro](#); [Neel Sahni](#); [Elaine Otte](#); [Randall Newton](#); [Angie Krieger](#); [Dave Pyburn](#)
Subject: Re: Interesting Article
Date: Thursday, October 4, 2018 2:21:21 PM
Attachments: [image001.png](#)

That's aggressive! BHAG

Sent from my iPhone

On Oct 4, 2018, at 6:52 AM, Jim Murray <JMurray@pork.org> wrote:

Check out this article and report. I was at the F2-FoodScape Conference in Chicago and the lady representing the Impossible Burger told the crowd their company's goal was to ensure by 2025 that no meat from animals would be consumed in America.

<https://www.foodnavigator-usa.com/Article/2018/09/30/Clean-meat-is-problematic-but-cell-based-meat-isn-t-perfect-either-reveals-GFI-consumer-research#.W7JGu9pMkXA.linkedin>

JM

Sincerely,

James T Murray

Certified Executive Chef-National Channel Account Manager

National Pork Board

(b) (6)

(b) (6) mobile

<image001.png>

Please conserve our natural resources, think twice before you print this e-mail.

From: [Dave Pyburn](#)
To: [Adria Huseth](#)
Subject: RE: LCA for Petri Dish Protein Products
Date: Wednesday, February 21, 2018 11:03:00 AM

Thank you

Dr. Dave Pyburn
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Email: DPyburn@pork.org

From: Adria Huseth
Sent: Wednesday, February 21, 2018 10:01 AM
To: Dave Pyburn <dpyburn@pork.org>
Subject: RE: LCA for Petri Dish Protein Products

Alternative proteins is really dealing with two kinds of “alternative” proteins....the soy / plant based type meat replacement which is defined and analyzed, and the new lab meats that are made from cells, etc. These latter “replica meats” would be impossible to define until they are made.

Did you hear the speaker (from U. of Missouri) on gene editing last Tues afternoon....he thought the “replica meats” will never make it, or anytime soon....too costly, etc. A nutrition committee member had filled me in. I did not hear him personally.

Anyway, I have a couple emails out regarding experts who could fill in some of the gaps you’ve been looking into and let you know what I find out.

Healthy Regards,

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From: Dave Pyburn
Sent: Wednesday, February 21, 2018 9:53 AM
To: Bill Even <BEven@pork.org>; John Johnson <johnjohnson@pork.org>; Allan Stokes <ASTokes@pork.org>; Chris Hostetler <chostetler@pork.org>; Adria Huseh <ahuseh@pork.org>; Jarrod Sutton <jsutton@pork.org>
Subject: LCA for Petri Dish Protein Products

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From: Laura Bachmeier
Sent: Wednesday, February 21, 2018 9:49 AM
To: Dave Pyburn <dpyburn@pork.org>
Cc: Steve Larsen <slarsen@pork.org>
Subject: RE: Please Find this Paper for Us - Thanks

Here you go.

Regards,

Laura Bachmeier, M.S.
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From: Dave Pyburn
Sent: Tuesday, February 20, 2018 6:57 PM
To: Laura Bachmeier <LBachmeier@pork.org>
Cc: Steve Larsen <slarsen@pork.org>
Subject: Please Find this Paper for Us - Thanks

**Anticipatory Life Cycle Analysis of In Vitro Biomass Cultivation
for Cultured Meat Production in the United States**

[Carolyn S. Mattick](#)^{*†}, [Amy E. Landis](#)[‡], [Braden R. Allenby](#)[§], and [Nicholas J. Genovese](#)^{||}

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Environ. Sci. Technol., **2015**, *49* (19), pp 11941–11949

DOI: 10.1021/acs.est.5b01614

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Please conserve our natural resources, think twice before you print this e-mail.

From: 21stPork-owner@mail.gsstrategicforums.com on behalf of [Steve Weiss](#)
To: 21stpork@gsstrategicforums.com; 21stelpc@gsstrategicforums.com; 21stporkca@gsstrategicforums.com
Subject: FW: Will Fake Meat Ever Be as Good as Real Meat? An Investigation.
Date: Sunday, January 8, 2017 1:32:13 PM

There is an increasing trend of alternatives to meat protein – a lot of \$\$ being spent, some pretty smart people – the reason why we had Dr. Mark Post (inventor of in vitro meat) speak at NPIC last year. It's something we need to keep an eye on as a potential threat to our industry, for sure.

I thought this was a great article, from someone who “wants” fake meat to be better.

Will Fake Meat Ever Be as Good as Real Meat? An Investigation.

By Elizabeth G. Dunn, Thrillist

Inside Momofuku Nishi's tastefully spare dining room, I'm sipping a cold Narragansett lager and reminiscing about fulsome pork feasts past when the Impossible Burger arrives. It's topped with a wilting slice of American cheese, lettuce, tomato, pickles, and secret sauce, on a squooshy house-made bun. I stop and examine the patty, studying the gray-brown char of its exterior, and the hints of fleshy pink beneath. It looks almost exactly, mouthwateringly, like beef.

Which it isn't. It is the debut product release from Impossible Foods, which has raised hundreds of millions in venture capital from the likes of Bill Gates and GV with the goal of making meat from plants that's so good it renders food animals an obsolete technology. The company's website is heavy on burger glory shots and artsy photographic references to the Impossible Burger's ingredients, but buried in an FAQ page lives a complete list. Textured wheat protein (aka gluten), coconut oil, and potato protein dominate, but the killer app is something called heme: a compound that endows the plant patties with the trademark red, bloody complexion of raw meat, and supposedly unlocks the flavor of sugars and amino acids. "We discovered that heme is what makes meat smell, sizzle, bleed, and taste gloriously meaty," the website proclaims.

The Impossible Burger is still a small-scale concern. It isn't available in grocery stores, but the company has partnered with a few prominent chefs to feature it on their menus and build an early buzz. Here in New York, it has been taken on by Momofuku's David Chang, patron saint of umami and the meat sweats; a man who has built a reputation for declining to offer vegetarian substitutes at his restaurants. This strikes me as a rather remarkable endorsement.

So I take a bite.

Bring me the flesh of dead beasts, so that I might feel terrible about myself later

I want to say here how much I love meat. I have no experience with meat-free diets apart from the accidental bowl of gazpacho, and a single, dismal meal with my mother at a vegan restaurant in San Francisco in 2005. At its best, meat delivers total nirvana, and at its worst it's still pretty good. Counting also in meat's favor is its simplicity to prepare, with the highest-quality specimens asking only for a sprinkling of salt and a short stay in a hot pan. The New York Times' "Ultimate Veggie Burger" recipe requires, in the quest for tastiness, 17 ingredients, an oven, a food processor, and a grill. My favorite hamburger recipe, from Dean Martin, is four sentences long and calls for a pound of ground beef, a frying pan, 2oz of chilled bourbon, and a TV tray.

That being said, I've been thinking about meat lately. Not about the hiss of bloody sirloin hitting cast iron, or the permeating smell of a pork shoulder roasting to butter-softness. I've been thinking instead about how to say goodbye to it.

There's been no single trigger. The evidence has piled up slowly, a snowdrift of distressing climate reports and subpar cholesterol scores and the chance discovery that pigs can be taught to play video games. Today in America we kill over 9 billion food animals per year. Raising animals for food consumes half of all water used in this country, and three-quarters of all our grain. By some estimates, food animals produce more greenhouse gasses than every last airplane, train, car, bus, boat, and truck on Earth. And so-called "sustainable" farming, while reducing animal cruelty and antibiotic use, is hardly a silver bullet. There isn't enough available land on Earth to raise all those cows and chickens free-range or cage-free; food animals already cover 30% of the Earth's land surface, mostly living in the livestock equivalent of a subway car at rush hour.

What's more, I have noticed Silicon Valley training its penchant for disruption on the problem of meat, framing it as one of the defining struggles of our generation. Venture-rich upstarts Impossible Foods and Beyond Meat claim to be reinventing plant-based meat alternatives, while Mosa Meat and Memphis Meats and others tinker with the far-off (if not far-fetched) goal of growing mass quantities of meat in vitro.

In light of these advances, and the horrors that begat them, I began to wonder: Can a guilt-ridden carnivore like me find satisfaction in fake meat?

The Impossible Burger is Impossibly Upsetting

You know that old gag where a cartoon dog is day-dreaming of a T-bone steak and licking his chops and then just when he's about to tuck in, the steak vanishes in a cloud of smoke? Back at Momofuku Nishi, biting into the Impossible Burger, I become that dog. First I taste the sweet, pillowy potato bun, then the tangy pickles, the crunchy lettuce -- so far, so good -- and then a sort of soggy, fatty element with a weak, vaguely smoky, nutty taste, like instead of eating a hamburger I am eating something that was cooked near a hamburger. The disconnect between the glistening pink, beefy patty and the muted flavor of the thing is profound and appetite-withering.

I'm surprised at the level of revulsion I feel for something that, while not meaty, isn't objectively repellant. And then I think of The Polar Express. It's a Christmas film from 2004 in which the computer-animated humans look and move very nearly but not exactly like real humans, and because of those small deviations it is a horror to watch. There's a term for this: "the Uncanny Valley." Originally coined by the Japanese roboticist Masahiro Mori in 1970, it describes our well-documented revulsion toward things that appear almost human, but just a shade off.

Fake meat, I discover at Momofuku Nishi, has its own Uncanny Valley effect: The closer something gets to the real article, the more glaring any slight deviation. Four million years of evolving to prize animal protein has left me with precisely calibrated sensors for spotting a fraud.

The fries, however, are excellent.

Please conserve our natural resources, think twice before you print this e-mail.

From: [Andy Brudtkuhl](#)
To: [Bill Even](#); [John Johnson](#); [Chuck Cozad](#); [Dave Pyburn](#); [Jarrod Sutton](#)
Subject: Venture capitalist on synthetic meat
Date: Sunday, June 10, 2018 6:02:56 PM

~15min listen to perspective of a VC who is investing in synthetic meat. He invested in Memphis meats with Tyson and Cargill

10-20 years, "this is the inevitable future".

2 approaches.

1. Replace meat with something that's not meat (plant based)
2. Make meat without the animal. Lab grown cells. "Just a change in the manufacturing method". Most probable.

"The largest buyers of meat will want to diversify their supply chain"

Steve Jurvetson — The Midas Touch and Mind-Bending Futures

<https://overcast.fm/+KebuzKcL0/2:18:28>

Please conserve our natural resources, think twice before you print this e-mail.

From: [Rick Borman](#)
Subject: Venture Capitalists Disrupting Meat Industry
Date: Tuesday, November 13, 2018 10:02:35 AM

A growing number of “socially conscious” investment firms are putting pressure on conventional farming by investing money in businesses specializing in alternative “meat” and “dairy” products.

According to research done by CB Insights, in May 2017 the five [most well-funded](#) fake meat startups had raised \$557 million. Overall, the top 15 startups raised a combined \$1.49 billion.

One year later, even more money had poured in. As of April 2018, Impossible Foods had increased the amount of money it had raised from \$187 million to \$506 million.

This sector is clearly growing in scope and funding. Along with fake meat startups attracting support from more mainstream investors (such as Bill Gates), specialized activist funds are emerging. Below is information on some of the venture capital firms.

At the same time, activist investors are pressuring public companies with shareholder resolutions (also discussed below).

It is important to keep in mind that much of the \$1 billion-plus raised for these startups will soon fund [marketing](#) for the brand alternatives to meat/dairy/eggs.

Stray Dog Capital

Led by CEO Lisa Fera, Stray Dog Capital is a venture capital firm specializing in early-stage investment in vegan companies. According to Crunchbase, Stray Dog Capital has participated in funding for:

- Good Catch (fake fish) - \$8.7M funding round (was [lead investor](#) with \$5.5M)
- SuperMeat (fake chicken) - \$4M funding round
- Miyoko's Kitchen (fake cheese) - \$6M funding round
- Geltor (animal-free proteins) - \$2.3M funding round

New Crop Capital

Aims to “fix” the “broken system” of “animal agriculture.” New Crop Capital is run by a former HSUS employee and counts Bruce Friedrich (longtime PETA exec) as an advisor. New Crop Capital has participated in funding rounds for:

- Memphis Meats (lab-grown meat)
- Geltor
- Blue Nalu (lab-grown fish)
- Aleph Farms (3D-printed beef)
- SuperMeat
- Beyond Meat (plant-based meat)

Fifty Years

Fifty Years seeks to make a long-term impact by investing in what the founders see as promising startups that will be profitable and change the world. Fifty Years has invested in:

- Vitro Labs
- Geltor
- Memphis Meats
- Seattle Food Tech (plant-based “meats”)

Karner Blue Capital

An investment firm, Karner Blue Capital has its own standards and recommends companies for investors to invest in. It was founded in July 2018 to pressure companies into making changes to corporate policies using proxy voting or shareholder resolutions.

“If I can get one company to stop using gestation crates that would be a milestone for me,” says founder Vicki Benjamin. Karner Blue Capital hopes to have \$50-\$100 million in assets by the end of 2018. A portion of the management fees will be donated to groups like HSUS.

Farm Animal Investment Risk & Return (FAIRR) Initiative

The FAIRR Initiative is run by UK investment manager Jeremy Coller. FAIRR pressures publicly traded companies on mainly two issues: 1) reduce the use of antibiotics in animal protein supply chains 2) reduce investment in meat companies and increase investment in plant-based companies. In other words, FAIRR claims investments in traditional meat companies are institutional risks.

FAIRR's stated target list includes McDonald's, Yum!, and Domino's. FAIRR claims to have the support of groups that represent \$10 trillion in assets under management.

-Rick



From: [Dave Pyburn](#)
To: [Allan Stokes](#); [Brett Kaysen](#); [Adria Huseth](#)
Subject: RE: Lab Meat
Date: Thursday, April 19, 2018 2:18:00 PM

Thanks Allan – makes more sense now

Dr. Dave Pyburn
Vice President of Science and Technology
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Email: DPyburn@pork.org

From: Allan Stokes
Sent: Thursday, April 19, 2018 1:00 PM
To: Dave Pyburn <dpyburn@pork.org>; Brett Kaysen <BKaysen@pork.org>; Adria Huseth <ahuseth@pork.org>
Subject: RE: Lab Meat

The USGS website on water content of various products (link below) lists water content of beef at 460 gallons per quarter pound which would be 1,840 gallons per pound <https://water.usgs.gov/edu/activity-watercontent.php>

BUT – Their cited source is the Water Footprint Network <http://waterfootprint.org/en/resources/interactive-tools/product-gallery/> which cites as it's source work done by Mekonnen & Hoekstra "Mekonnen, M.M. and Hoekstra, A.Y. (2011) The green, blue and grey water footprint of crops and derived crop products, *Hydrology and Earth System Sciences*, 15(5): 1577-1600."

Part of the problem with Mekonnen & Hoekstra's work is it includes ALL water, including "green water" which is snow and rain. Most Life Cycle Assessments for most products look only at "blue water" which is water extracted from surface and groundwater sources. LCA's generally do not include "green water" because this is not something people can control. Pretty sure it isn't going to rain or snow less in the midwest if we quit growing crops and livestock.

Most LCA work on products looks at "Blue Water" (water purposely extracted from surface or groundwater sources) use.

Most of their aggregated numbers are based on roll-ups of global production rather than just U.S. or European Union production. Third world and developing countries can tend to have hire footprints – especially GHG due to land use conversion – than developed countries.

Allan

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From: Dave Pyburn
Sent: Thursday, April 19, 2018 12:07 PM
To: Brett Kaysen <BKaysen@pork.org>; Allan Stokes <ASTokes@pork.org>; Adria Huseh <ahuseh@pork.org>
Subject: Lab Meat

Where are they getting these numbers?

1. [Lab to Table: The Promising Future of Artificial Meat](#) - Brown Political Review

In the United States, we both love animals and love to eat them. But even as people grow more aware of the questionable practices of the meat industry, only the 3 percent of Americans who identify as vegetarians are able to resist the lure of a well-cooked burger or sizzling bacon. While the numbers vary around the world, the overwhelming majority of diets are meat-oriented. What's more, global per capita meat consumption has more than doubled between 1961 and 2007 and is expected to double again by 2050. As the meat industry grows, so do its adverse effects on global health and the environment. Although turning away from meat seems to suggest moving towards plant-based alternatives, the solution may lie quite far from farmlands: lab-grown meat.

The ballooning reliance on meat is taking its toll on the globe. It takes over 1,800 gallons of water to produce 1 pound of meat, and livestock are seriously depleting water reserves in drought-ridden areas such as Southern California. Over 26 percent of Earth's arable land is used for grazing and feed production for the 20 billion animals being raised for consumption. Most devastatingly, cows do not just produce cheese, they also cut it: Over 14.5 percent of global greenhouse emissions come from cattle.

Over 26 percent of Earth's arable land is used for grazing and feed production for the 20 billion animals being raised for consumption.

Meat also brings expensive unseen costs. Those who consume high amounts of red meat are at higher risk for cancer and cardiovascular disease. These conditions burden the healthcare system and weaken the economy through lost labor and productivity. If US consumers simply followed federal diet recommendations, health outcomes would improve enough to save the US \$200 billion per year by 2050.

A blunt but misguided fix to the overreliance on meat would be to suggest mass vegetarianism. Whether due to cultural or culinary reasons, many Americans are hesitant to give up meat. Further, the majority of protein in most Americans' diets comes from meat, and while it's possible to replace it with plant-based products, poor nutritional education makes meat the most obvious protein source. Luckily, technology has provided alternatives that address both the problems caused by mass animal production and those caused by cultural expectations of meat.

A few years ago, a test tube burger drew media attention, for both its unusual product and its cost. The burger, which was made by taking cattle stem cells and growing them outside of the cow, cost upwards of \$300,000; however, the cost of the burger quickly plummeted. By 2017, producing 5 ounces of meat this way cost \$11.36. While still well above the direct cost of regular meat, the technology is advancing rapidly, and lower prices are on the horizon. Creating meat in a lab gives producers the ability to regulate the amount of different nutrients and vitamins, potentially allowing for meat that is even healthier than beef from organically raised cows. Further forays into the field could create the potential to eliminate carcinogenic elements from meat without sacrificing flavor or nutrition. In the meantime, studies predict that growing meat in labs would cut down on the amount of land and water needed for livestock by 99 and 90 percent respectively, while emitting only 4 percent of the greenhouse gases produced by the traditional meat industry.

Creating meat in a lab gives producers the ability to regulate the amount of different nutrients and vitamins, potentially allowing for meat that is even healthier than beef from organically raised cows.

Another option for alternative meat lies in plant protein. Companies such as Beyond Meat and Impossible Foods have had success manipulating protein from peas and other plants into a familiar form with the texture of meat that cooks, sizzles, and even bleeds fake blood made out of beet juice. These companies aren't just making veggie burgers; they analyze the molecular compounds of meat to find out how to perfectly replicate the sensation of biting into a juicy burger. For example, Impossible Foods claims that heme, an iron-containing molecule found in blood, is crucial to the flavor and texture of beef. By transferring the heme-creating gene in soybeans to yeast, the company has been able to produce heme on an industrial scale. By combining it with potato protein, wheat protein, and coconut oil, they have managed to create authentic-tasting meat without ever touching a cow.

Unfortunately, despite the realistic attributes of these artificial meats, food analysts have generally seen these options more as "an opportunity for the vegetarian market" than as an appeal to the carnivorous crowd. In order for artificial meat to have a real impact, it needs to reach beyond the 3 percent of Americans who do not eat meat. This under-tapped market provides a crucial opportunity for the US government to protect the environment, improve health, and save money.

The government should first consider subsidizing the artificial meat industry. At first glance, this option does not seem necessary—billionaires such as Bill Gates and Richard Branson fund companies like Modern Meadow, and Beyond Meat just signed a deal with TGI Friday's—but subsidies do much more than offset production costs. With appropriate research, subsidies can help increase the supply of alternative meats and incentivize customers by lowering prices to buy the products.

The government should also consider funding advertising campaigns in support of artificial meat. Campaigns similar to the those against smoking carried out nationwide, in partnership with legislation, may help steer people away from consumption of traditional meat in favor of meat alternatives. Such a combination has proven to be effective in the past. In 1965, 42.4 percent of American adults and high school students smoked cigarettes, and by 2014, the number had dropped to 16.8 percent. After the US Surgeon General publicly denounced smoking in 1964, the number of Americans who believed smoking caused cancer went up from 44 percent to 78 percent. And in 2014, the CDC started the first federally funded anti-smoking campaign. In one year, the Tips from Former Smokers campaign helped almost two million Americans attempt to quit smoking. A similarly aggressive campaign against the overconsumption of meat could convince people to find substitutes.

As with the government's anti-smoking campaign, government advertisements against meat should be accompanied by taxation. While factory farms may be too profitable for a tax to make a sizable impact, taxing customers may cause some to turn away from the deli and head towards something like the Beyond Meat Beast Burger. Studies suggest that a 40 percent sales tax on beef would cut consumption by 15 percent, a meaningful bump when combined other policy initiatives.

Now is not the time to mince words: The worldwide meat addiction is having disastrous effects on health, the environment, and the economy. Artificial meats are a new and surprisingly palatable solution to meat overconsumption. The government should spur its research and development to beef up a new era of ethical, healthy, and sustainable consumption.

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Please conserve our natural resources, think twice before you print this e-mail.

From: [Heather Fowler](#)
To: [Dave Pyburn](#)
Subject: RE: Pork farming: the next battlefield for fighting antibiotic resistance
Date: Friday, December 28, 2018 2:46:00 PM

Thanks, the author is a fellow VMD, 2002 grad. The author bio suggests he currently works in Asia. From what I've read he's been there for quite some time after completing a AAAS fellowship in the early 2000's

Oh and judging from this quotation, he likely either had no clinical focus in vet school or was studied small animal medicine:

"[Plant-based](#) and [cell-cultured meat](#) products could someday reduce or even do away with the need for traditional live animal production and slaughter, bypassing the complex ethical, environmental, and health challenges these systems can pose. "

Heather Fowler, VMD PhD MPH DACVPM
Director of Producer and Public Health
National Pork Board
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Email: HFowler@pork.org

From: Dave Pyburn <dpyburn@pork.org>
Sent: Friday, December 28, 2018 1:22 PM
To: Heather Fowler <HFowler@pork.org>
Subject: Fwd: Pork farming: the next battlefield for fighting antibiotic resistance

Sent from my Verizon, Samsung Galaxy smartphone

----- Original message -----

From: James Dickson <dicksonconsulting@live.com>
Date: 12/28/18 9:02 AM (GMT-06:00)
To: Steve Larsen <slarsen@pork.org>, Laura Bachmeier <LBachmeier@pork.org>, Liz Wagstrom <WagstromL@nppc.org>, Dave Pyburn <dpyburn@pork.org>
Subject: Pork farming: the next battlefield for fighting antibiotic resistance

Thought you might be interested.

--

Pork farming: the next battlefield for fighting antibiotic resistance

McDonald's recently announced it will begin phasing out the use of medically important antibiotics in its global beef supply chain, building on its experience phasing out such antibiotics from its chicken supply. Other retail food chains have also made progress. Now it's time to take aim at pork.

McDonald's promise is a commendable step in addressing antimicrobial resistance, one of our most pressing global health challenges. It's also an important signal that consumers hold power to shift food industry practices toward sustainability.

Nearly a century ago, Alexander Fleming's discovery of penicillin launched modern medical practice into the antibiotic era. His discovery, and those that followed, are credited with saving untold millions of lives and enabling landmark medical breakthroughs. Yet decades of inattentive use — for purposes as different as treating viral infections, for which antibiotics are ineffective, to the industrial production of beef, chicken, pork, and seafood — now risks throwing away the gift of these precious medicines.

<snip>

This is attributable in part to our insatiable demand for animal protein. Every year, global livestock agribusinesses mobilize more than 131,000 tons of antimicrobial agents to produce our poultry, eggs, dairy, and meat (and this estimate did not include fish farming). That volume is expected to surge 52 percent globally by 2030, and to double in the fast-growing economies of Brazil, Russia, India, China, and South Africa as demand for animal protein grows along with the size of the middle class.

Global pork production from swine represents one of the largest consumers of antibiotics per unit of live animal weight. In the course of its four-month journey from piglet to slaughter, every hog on this planet — and there are nearly a billion of them — will consume three times the amount of antibiotics by animal weight as cattle, and 2.5 times the amount of antibiotics as the average European citizen.

<https://www.statnews.com/2018/12/21/pork-farming-fighting-antibiotic-resistance/?MessageRunDetailID=84198508&PostID=3475603>

Jim Dickson

515.231.4926

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Please conserve our natural resources, think twice before you print this e-mail.

From: [Dave Pyburn](#)
To: [Steve Weiss](#)
Subject: RE: Regulatory for Alternatives
Date: Friday, October 26, 2018 3:35:00 PM

Yes, I think so, maybe the best we could have hoped for. Need to see the details before I get too giddy though.

Dr. Dave Pyburn
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From: Steve Weiss <steve@nutriquest.com>
Sent: Friday, October 26, 2018 12:40 PM
To: Dave Pyburn <dpyburn@pork.org>
Subject: Re: Regulatory for Alternatives

A positive outcome from your view?

Steve Weiss
President
NutriQuest
(641) 420-1002

On Oct 26, 2018, at 12:23 PM, Dave Pyburn <dpyburn@pork.org> wrote:

[Dispatch from D.C.: USDA and FDA agree to jointly regulate cell-cultured meat. And yes, it's meat.](#) The USDA and FDA have resolved the dispute over which agency will regulate cell-cultured meat products by deciding to jointly regulate the cell-cultured industry. The FDA would conduct a pre-market approval of any cell-cultured meat product, the standard process for pharmaceuticals, and then the USDA will take over when the cell-cultured products move to production at commercial scale. The FDA and USDA hope to finalize the regulatory framework by 2019, which means regulators could be evaluating cell-cultured hamburger or chicken nuggets in a year's time. While the agencies did not determine how the products will be labeled, the New Food Economy says it's likely it won't be called "clean meat," the term favored by the cell-cultured meat industry.

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From: [Dallas Hockman](#)
To: [Jarrod Sutton](#)
Subject: NPPC Food and Ag Vision
Date: Thursday, February 8, 2018 12:12:01 PM

NPPC Food and Ag Vision



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In This Issue

[What to Know](#)

Greetings from
Dallas Hockman

[What to Read](#)

NAFTA progress?
Alternative 'Meats'

[Who to Know](#)

Stewart Leeth, Smithfield
Steve Easterbrook, McDonald's
Scott Gottlieb, EPA

[What to Watch For](#)

2018 Predictions

Quote of the Month

“ The supply chain, not consumers, will be the prime movers in changing ag. As in Smithfield’s decision to phase out gestation crates. ”

— Tamar Haspel, agriculture reporter, *The Washington Post* ([Twitter](#))

What to Know

Greetings,

Welcome to the NPPC Food and Ag Vision! For the past five years, NPPC has provided its constituents with a monthly report that summarizes important happenings in food and agriculture. This is the first edition of a fresh approach. We’ve listened to your input and rearranged the look and content of this report to deliver important industry information to you each month. Our purpose is to provide you with a snapshot of the industry told through its most prominent voices.

This report is unique and should not be considered another news aggregator. Rather, the content of the Food and Ag Vision is developed by Bader Rutter’s Influence Center, a team of analysts who constantly monitor industry happenings and keep close tabs on the conversations by and about 1,500 of the most influential individuals in food and agriculture. Each edition will be tailored to represent the most relevant industry happenings month to month. You will receive a summary of the top issues with links to critical stories and documents and profiles of prominent influencers as well as other features like timelines, quotes and notes on what’s to come.

We welcome your input as we strive to improve the services NPPC can provide to you. Please get in touch with us with questions or comments and feel free to forward this email on to colleagues who may appreciate a concise and powerful monthly industry report.

Sincerely,

Dallas Hockman
National Pork Producers Council
VP Industry Relations

What to Read

International Trade News

The North American Free Trade Agreement (NAFTA) continued to dominate headlines in trade and mainstream media alike. However, a few other international trade issues surfaced as well.

- American Farm Bureau Federation’s annual conference [stirred](#) conversations beginning on Jan. 7.
- President Trump: “I’m negotiating tough for the farmers.” ([Agri-Pulse](#), Jan. 10)
- President Trump: “A lot of people don’t realize how good it would be to terminate NAFTA because the way you’re going to make the best deal is to terminate NAFTA.”

(Reuters, Jan. 17)

- A coalition of 71 agriculture industry organizations [united](#) as Americans for Farmers & Families to further emphasize agriculture's interests in NAFTA.
- Reuters [reported](#) that U.S. soy exports to China have lost market share to Brazilian soy. Protein content is the culprit.
- President Trump [suggested](#) that the United States may return to the negotiating table for the Trans-Pacific Partnership (*Meatingplace*).

Alternative 'Meats'

Plant-based meat substitutes and cultured (lab-grown) meat products garnered attention through numerous small events throughout January.

- *Watt AgNet's* poultry editor, Austin Alonzo, [predicted](#) that plant-based proteins will gain traction in 2018.
- On Jan. 1, animal rights activist Paul Shapiro ([formerly](#) with The HSUS) [released](#) his book *Clean Meat: How Growing Meat Without Animals Will Revolutionize Dinner and the World*.
- Plant-based food manufacturer Beyond Meat [announced](#) on Jan. 2 that TGI Fridays will serve its Beyond Burger product nationally.
- On Jan. 29, Tyson Foods [invested](#) in lab-grown meat startup Memphis Meats, according to *Bloomberg*. Tyson [positioned](#) the move as a way to diversify its protein holdings.



Who to Know

Stewart Leeth



Stewart Leeth
Chief Sustainability Officer,
Smithfield Foods

Leeth announced that Smithfield Foods successfully phased out gestation stalls in its hog production facilities (*Virginian-Pilot*). The move [fulfills](#) a decade-old commitment.

Steve Easterbrook



Steve Easterbrook
CEO,
McDonald's Corporation

Easterbrook has been at the helm for McDonald's recent turnaround, a tenure punctuated by policy changes, such as [boosting](#) recycling efforts and [switching](#) to fresh beef (*Chicago Tribune*).

Scott Gottlieb



Scott Gottlieb
Administrator,
FDA

Gottlieb [rebuffed](#) critics of FDA's decision not to issue a recall of romaine lettuce after Canadian officials linked an *E. coli* to the leafy greens, stating that the agency did not have clear evidence. Additionally,

Gottlieb [postponed](#) on-farm elements of the Food Safety Modernization Act.

What to Watch For

The beginning of a new year brought an array of predictions for 2018.

- JoAnn Alumbaugh [offered](#) “2018: Optimistic Outlook for Pork, Barring Disruptions” (*FarmJournal's Pork*)
- Eater [collected](#) restaurant-centric food trend predictions that range from obvious to bizarre.
- In contrast, *Grub Street* [presented](#) a list of “Dining Trends We Don't Want To See.”
- The Farmer's Daughter [wrote](#) a look-ahead for upcoming farm policy issues.
- International Food Information Council Foundation [predicted](#) technology and education will have large roles in 2018 food trends.
- Purdue University agricultural economist Jayson Lusk [explained](#) the economics behind USDA's [forecast](#) of higher meat consumption.
- Center for Food Safety [outlined](#) its agenda for social media-driven activism.

National Pork Producers Council, 10676 Justin Drive, Urbandale, IA 50322

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Sent by [hockmand@nppc.org](#)

Please conserve our natural resources, think twice before you print this e-mail.

From: [Andy Brudtkuhl](#)
To: [Chuck Cozad](#)
Subject: Re: NPB Emerging Tech
Date: Monday, June 11, 2018 1:25:30 PM
Attachments: [NPB Emerging Tech.pdf](#)
[ATT00001.htm](#)

Great! Go ahead and send it away. I attached a PDF that might be easier for distribution.

The food system is changing as rapidly as ever fueled by changes in new technology. From farming to retail to consumer, software and hardware are innovating the entire food chain. This is why companies like Tyson, Cargill, General Mills, Kellogg's, Campbell Soup, Dairy Farmers of America, Driscoll's, Walmart, Kroger, Hy-Vee, Amazon, and hundreds of AgTech startups are creating centers of innovation to create the Internet of Food. It's important for the National Pork Board to create the Sr Director of Emerging Technology position to be the Pork industry's pulse on what those changes are and how they affect producers, logistics, packers, retail, foodservice, and consumers.

In the near term, this position will integrate with NPB departments, stakeholders, projects, and organizational goals providing guidance and consulting on digital transformation and emerging technology. Furthermore it will interface with colleagues in the private sector to research and baseline the state of technology in the industry. And last it will work on creating a model for developing proof of concept projects with industry partners.

In the long-term, this position will help provide a vision of Pork industry innovation with respects to emerging technology through research, development, education, capital, and strategic partnerships. This includes developing partnerships with the industry to align with and consult on new technology and to roll out proof of concept solutions. It also includes working with private industry including technology vendors, venture capital, agtech accelerators, and startups as representation of the Pork industry. Education and thought leadership in the space will be necessary for increasing understanding and adoption of new technology while informing stakeholders and policy makers of possible outcomes.

This year is on pace to set a decade-high record for VC investment in food technology having poured over \$1.3 Billion into the space in the first five months (compared to \$1.5B *total* the last two years). These investments range from disruptive revenue models from startups selling meat direct to consumer to mobile restaurant/grocery delivery services to lab grown synthetic meat. It's imperative this new position keeps up with that progress by having a seat at the table while learning how NPB and the Pork industry can adapt to a new model of innovation - one powered by private industry and venture capital versus a traditional model of academic research. This sector has rapidly increasing VC and corporate investment interest because it is on the forefront of evolving consumer preferences. Convenience, health, and sustainability are a driving trend fueled by millennials and being addressed by founders, investors, and corporate innovation departments. This position will ensure the Pork industry sees where the puck is going not just standing where the puck was.

General Duties

- **Education** - *Who*: board, leadership, staff, media, industry, partners, states, producers, packers, retail. *What*: webinars, blog posts, reports, emails, presentations, spokesperson, public speaking, interviews
- **Liaison** - work, connect, and partner with the private industry - startups, technology companies, food chain partners, strategic partners
- **Research and Development** - research and analyze new technology. prototype and fund proof of concept solutions in emerging technology
- **Consulting** - help staff and partners facilitate digital transformation of industry. help industry partners to prototype new solutions and implement / integrate emerging technologies into their business

First 6 Months

- Networking with industry colleagues to baseline
- Work with Sci-Tech on 2019 Technology Budget
- Create a core team for an emerging tech proof of concept project (Blockchain)
- Work with Communications and organization on digital-first transformation goals
- Work with Domestic Marketing and IT on rolling out a bleeding edge Marketing Technology Stack
- Integrate with WeCare 2.0 / Sustainability Task Force to provide technology perspective
- Work with Communications on developing talking point summaries with Industry's perspective on emerging technologies

First 18 Months

- Work with senior leadership on creating an Innovation Task Force and/or Committee
- Work with senior leadership on integrating a technology vision into the new strategic plan
- Develop a process and cadence for education / thought leadership through digital content
- Research and produce a Pork Industry Technology Report
- Continuous education and training through classes and events in specific emerging tech
- Connecting with more AgTech accelerator / incubator programs

In First 2 Years

- Explore NPB role in venture capital, early stage investments, and startup accelerator programs as a new model for funding innovation
- Create framework for emerging technology research, prototyping, and funding

- Work with Producer Services to explore on-farm technology needs
- Work with Angie on strategic technology partnerships with packer/processor for research and proof of concept projects
- Work with DM on strategic partnerships in retail and foodservice emerging technology for research and proof of concepts
- Consult with industry partners on research, integration, and implementation of emerging technology

Tactics

- Research and analyze emerging technology
- Assist organization in digital transformation
- Facilitate proof of concept projects and solutions (Blockchain)
- Connect with industry colleagues (Tyson, Cargill, WalMart)
- Interface with AgTech startups and accelerators on behalf of the Pork industry (Iowa Agritech, Techstars, AgFunder)
- Administor NPB “Innovation Committee” or Task Force
- Min Bi-yearly board presentations
- Monthly Blog / Newsletter / Content for thought leadership and education
- Work with Communications on developing and maintaining talking points regarding emerging tech
- Media point of contact
- Public speaking
- Produce Annual “State of Technology” industry report (ie livestock tech report)
- Assist in NPB technology evaluation process
- Ask interesting questions - What are Pork industry’s moonshots?
- The Pork Fund - a venture capital fund/accelerator targeting early stage startups in the Pork Industry (snuck this one in, but seriously we can do this)

Relevant buzzwords in the Internet of Pork:

- Digital
- Software
- Mobile
- Big Data
- Data Science
- IoT
- Blockchain

- Voice
- Artificial Intelligence
- Machine Learning
- Machine Vision
- Deep Learning
- Neural Networks
- Robotics
- Autonomous Vehicles
- Cryptocurrency
- Augmented Reality
- 3D Printing
- Synthetic Meat
- AgTech
- Venture Capital
- Virtual Reality
- Analytics

Industry Precedent

- Driscoll's - Head of R&D Strategy and Emerging Technology
- [Tyson Ventures](#) - Tyson Ventures will invest in companies developing breakthrough technologies, business models and products to sustainably feed the growing world population
- Walmart - Director of Emerging Technology
- HyVee - VP of Strategy and Innovation
- Tyson Innovation Lab
- DFA - [Sprint Accelerator startup program](#)
- Cargill / Techstars - [Farm to Fork accelerator](#)
- [Cargill Digital Insights group](#)
- Plenty More!

From: [Cindy Cunningham](#)
To: [Chris Hostetler](#)
Subject: Re: NPB discussion on Cell Cultured Meat--
Date: Monday, December 17, 2018 9:55:11 PM

We can call it what we want, but the public is calling it what you don't like. So we can talk to ourselves in our own language—but will anyone hear us or know what we are talking about. Come to the meeting and voice your opinion.

Cindy Cunningham
Assistant Vice President, Communications
National Pork Board
515-210-1263
Sent from my iPhone

On Dec 17, 2018, at 7:03 PM, Chris Hostetler <chostetler@pork.org> wrote:

Please take "meat" out of the title of this email. Cripes! LOL!

Sent from my Verizon, Samsung Galaxy smartphone

----- Original message -----

From: Cindy Cunningham <ccunningham@pork.org>
Date: 12/17/18 5:15 PM (GMT-06:00)
To: Chris Hostetler <chostetler@pork.org>, Jarrod Sutton <jsutton@pork.org>, Kevin Waetke <kwaetke@pork.org>, Mike King <mking@pork.org>, Steve Larsen <slarsen@pork.org>, Laura Bachmeier <LBachmeier@pork.org>, John Johnson <johnjohnson@pork.org>, Dave Pyburn <dpyburn@pork.org>, Angie Krieger <AKrieger@pork.org>, Angie Gassett <agassett@webershandwick.com>, Jason Menke <JMenke@pork.org>
Subject: NPB discussion on Cell Cultured Meat--

As you know we have been working on the talking points on this issue with a tremendous amount of input. We thought we had curated all the input—only to find there had been some new ideas brought to the table. This meeting is ensure we have our position formulated and agreed upon, then we can restart with communications tools.

Your input is appreciated and critical.

We will involve others in the industry after we have developed our game plan.

Thanks

Cindy

Please conserve our natural resources, think twice before you print this e-mail.

From: [Dave Pyburn](#)
To: [Adria Huseth](#)
Subject: RE: NPB Daily Monitoring Report 6.18.2018
Date: Monday, June 18, 2018 3:50:00 PM

Yep saw that. We shall see...

Dr. Dave Pyburn
Vice President of Science and Technology
National Pork Board
1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634
Cell: (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

From: Adria Huseth
Sent: Monday, June 18, 2018 2:48 PM
To: Dave Pyburn <dpyburn@pork.org>
Subject: FW: NPB Daily Monitoring Report 6.18.2018

And so it begins..... Who will oversee the clean meat?

<https://www.politico.com/newsletters/morning-agriculture/2018/06/18/ags-trade-troubles-poised-to-grow-257385>

Healthy Regards,

Adria Huseth, RDN, LD, CPT
National Pork Board
Manager Nutrition Communications & Research
ahuseth@pork.org
P 515 223 2632 | **C** (b) (6) | **F** 515 309 6119
www.porkandhealth.org

Please conserve our natural resources, think twice before you print this e-mail.

From: [Dave Pyburn](#)
To: [Mike King](#); [Bill Even](#); [Bill Winkelman](#); [Calvin VandeKrol](#); [Chuck Cozad](#); [Craig Morris](#); [Jamie Byrnes](#); [Jarrod Sutton](#); [Jill Criss](#); [John Johnson](#); [Kevin Waetke](#); [Cindy Cunningham](#); [Steve Larsen](#); [Chris Hostetler](#)
Subject: RE: New article on cultured meat
Date: Wednesday, March 21, 2018 5:47:38 PM

But not everyone is totally behind that term. "The main reason I don't like clean meat is its substantial, moral indictment of contemporary carnivory," said Wurgaft. "It's an effort to superimpose the logic of animal rights vegetarians on existing dietary practice. I also don't think it's clean, because I don't think that we know that it's clean, environmentally speaking."

Dr. Dave Pyburn
Vice President of Science and Technology
National Pork Board
1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634
Cell: (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

From: Mike King
Sent: Wednesday, March 21, 2018 3:36 PM
To: Bill Even <BEven@pork.org>; Bill Winkelman <bwinkelman@pork.org>; Calvin VandeKrol <CVandeKrol@pork.org>; Chuck Cozad <ccozad@pork.org>; Craig Morris <CMorris@pork.org>; Dave Pyburn <dpyburn@pork.org>; Jamie Byrnes <jbyrnes@pork.org>; Jarrod Sutton <jsutton@pork.org>; Jill Criss <jcriss@pork.org>; John Johnson <johnjohnson@pork.org>; Kevin Waetke <kwaetke@pork.org>; Cindy Cunningham <ccunningham@pork.org>; Steve Larsen <slarsen@pork.org>; Chris Hostetler <chostetler@pork.org>
Subject: New article on cultured meat

Just saw this article pop up this afternoon. It's a bit long, but discusses all of the main issues we've been discussing about this subject.

<https://www.engadget.com/2018/03/21/cultured-meat-public-perception/>

Mike King
Director of Science Communication

National Pork Board
1776 NW 114th St.,
Clive, IA 50325 USA

Office +1 515.223.3532

Mobile + (b) (6)

Please conserve our natural resources, think twice before you print this e-mail.



MEDIA MYTHCRUSHER

Plant Based and Cultured Alternative Protein Products

In recent years there have been many new “meat alternative” products on the marketplace, as well as the ongoing development of lab grown or cultured meat products. These products have generated extensive media coverage and comparisons to traditional meat, though many claims made in the media are often unproven, misleading or downright false. This guide addresses the most common misperceptions and provides the facts.

#1: Plant based and Cultured Products are Not the Same

Although both generally are new products in the marketplace generating extensive media attention, plant based and cultured products are not the same and shouldn't be confused. Some plant based products have been on the marketplace for many years, and while newer players in the market highlight the technology they use to make their products more “meat-like,” they are still derived from plant based ingredients, such as pea protein or wheat protein. Cultured or lab grown products attempt to make meat from animal cells grown or cultured in a lab, and so are derived from animals.

#2: Odds Are You Have Not Tasted Cultured Meat

Although plant based products are commercially available, there are no cultured meat products available for purchase by consumers. To date, they have only been sampled by people with ties to the companies and a select few journalists. One company estimates it will have a lab grown beef or chicken product supplemented with “[plant based filler](#)” on the market by the end of 2018, but development costs remain high for most cultured products to be commercially

available. Most experts [estimate](#) that some cultured products will be ready for commerce around 2021.

#3: “Clean Meat:” Just a Marketing Term.

Recognizing that “lab grown,” or “cultured meat,” or “fake meat” products face significant challenges with consumer acceptance, the Good Food Institute conducted [at least 28](#) focus groups, surveys, and studies to figure out what marketing term would be most palatable. Through that process the term “clean meat” was born. However, as noted below, there is little evidence to suggest that meat grown in a lab is any “cleaner” than traditional meat, both environmentally and from a food safety perspective.

#4: Meat Is Defined

A [petition](#) from the US Cattlemen's Association asking USDA to define “meat” has led to confusion about some of the regulatory considerations related to plant based and lab grown products. USDA has had a definition of meat on the books for many years. A read of [9 CFR 301.2](#) suggests that the lab grown products most likely fit within the “meat” or “meat byproduct” definitions, which are regulated by USDA (underlined portion for emphasis):

a. **Meat** “part of the muscle of any cattle, sheep, swine, or goats which is skeletal or which is found in the tongue, diaphragm, heart, or esophagus, with or without the accompanying and overlying fat, and the portions of bone (and bone-in product such as T-bone or porterhouse steak), skin, sinew, nerve, and blood vessels with normal accompany the muscle tissue and that are not separated from it in the process of dressing.”

b. **Meat food product.** Any article capable of use as human food which is made wholly or in part from any meat or other portion of the carcass of any cattle, sheep, swine, or goats, except those exempted from definition as a meat food product by the Administrator in specific cases or by the regulations in part 317 of this subchapter, upon a determination that they contain meat or other portions of such carcasses only in a relatively small proportion or historically have not been considered by consumers as products of the meat food industry, and provided that they comply with any requirements that are imposed in such cases or regulations as conditions of such exemptions to assure that the meat or other portions of such carcasses contained in such articles are not adulterated and that such articles are not represented as meat food products. This term, as applied to food products of equines, shall have a meaning comparable to that provided in this paragraph with respect to cattle, sheep, swine, and goats.

c. **Meat byproduct.** “Any part capable of use as human food, other than meat, which has been derived from one or more cattle, sheep, swine, or goats. This term, as applied to products of equines, shall have a meaning comparable to that provided in this paragraph with respect to cattle, sheep, swine, and goats.”

#5: Know the facts on Greenhouse Gasses and Environmental Impact

Common claims about the benefits of plant based or lab grown meat products often focus on environmental impact. The Meat Institute has a [Media MythCrusher](#) specifically dedicated to environmental issues, but most importantly, [Environmental Protection Agency data](#) show that livestock production in the U.S. accounts for around four percent of total greenhouse gas (GHG) emissions. A recent [study](#) from the Proceedings of the

National Academy of Sciences evaluated the potential impact if everyone in the US adopted a meatless diet and found that it would only reduce total U.S. GHGs by 2.6 percent, and there would be a greater number of deficiencies in essential nutrients.

Limited research has been done on the potential impacts of large scale production of plant based or lab grown products, but a study by [Smetana et al.](#), which performed a lifecycle assessment of all the possible inputs showed that, compared to meat and other meat alternatives, cultured muscle tissue had the greatest impacts on climate change, human health, ozone depletion, radiation, metal depletion, and fossil depletion, mainly due to the massive amounts of energy it would take to produce cultured muscle tissue. In the same study, vegetable proteins showed lower impacts compared to the production of chicken, but all products' impacts were lower than production of muscle tissue via cell culture.

#6: Nutrition Benefits are Unclear

Cultured products are not on the marketplace, so exact nutrition data is not available, though as a product directly derived from meat, the nutrition should be similar. New plant based products on the marketplace most commonly imitate 80 percent lean burgers and offer similar amounts of calories, fat, protein and iron. Sodium levels in plant based products are considerably higher ranging from [380-430 mg](#) of sodium compared to just [75 mg for beef](#). Consumers also have the option to reduce the fat and calories from beef hamburgers by choosing leaner ground beef blends. This flexibility is not available with specific plant based products. The number of ingredients per product is also considerably different, with plant based burgers commonly featuring [20+ ingredients](#) compared to just one for beef.

#7: Safety Benefits Unknown

To date there is no research available on food safety differences between traditional meat production and cultured or plant based products. All raw agricultural products carry some level of bacterial risk and human handling can also introduce risk. This is true whether the product is animal or plant based. Americans currently eat approximately 285 billion servings from the meat and poultry group per year. An estimated 99.999 percent of these servings are consumed safely. Although the report has [flaws](#), recent DNA testing of plant based and meat based burgers found that [nearly a quarter](#) of plant based products had food quality issues ranging from inaccurate ingredient labels,

pathogens or foreign DNA.

#8: Animals are Currently Necessary for Cultured Meat

In order for animal cells to grow in a lab, cells from an animal are needed. There also needs to be nutrients added for them to grow. Scientific journals [cite](#) the most commonly used and effective nutrient used to grow meat cells as fetal bovine serum, which comes from fetal calves obtained during the commercial harvest of cattle for meat products. Researchers are actively looking for growth serum that does not come from an animal source and some companies claim they are using alternative options, though these are typically proprietary and unclear how effective they are growing cells at a commercial scale.

#9: Replacing Animal Agriculture Has Consequences Beyond Meat

Many proponents of alternative protein products cite a desire to eliminate or drastically reduce animal agriculture, though such a change would have major consequences across the economic and production spectrum. The meat industry employs millions of people, contributing more than a [trillion dollars](#) to the US economy. [Studies](#) have shown that land used for grazing or growing animal feed is often unsuitable for other agriculture purposes. Consideration also must be given to the range of other products that come from animals which would also need to be replaced. Losing [meat byproducts](#) would mean losing, at least in part, many chemicals used in cleaning supplies, cosmetics, plastics, soaps, gelatins, and pharmaceutical and medical supplies. While it is possible that these can be replicated another way, the environmental and economic implications of replacing those many products is unknown.

#10: All Food is Regulated

Recent calls for regulators to evaluate cultured meat have generated considerable media attention, though all foods are regulated by FDA or USDA and any products developed through novel technologies for human consumption will be regulated as well. The North American Meat Institute has adopted a position unanimously approved by its Board of Directors that USDA, through the Food Safety and Inspection Service (FSIS), should assert jurisdiction over these products. We believe this will ensure that lab-grown, cultured meat and poultry products are wholesome and safe for consumption and are labeled and marketed in a

manner that ensures a level playing field in the marketplace.

#11 Inspection Occurs in ALL Meat Plants

Some have claimed there is no need for inspection in facilities where animals are not being harvested, however this ignores a key fact: USDA inspection is required for all federal meat plants, whether harvesting occurs or not. Even in plants where meat is simply processed into ground beef, hot dogs or deli meats, USDA inspectors are there daily. There may be fewer USDA inspectors, but these plants are still subject to daily inspection.

#12: Meat Alternatives are Not New

Plant based meat imitators or replacements date back to [tofu in China](#) in the year 965. More recently there have been many different products available at grocery stores and restaurants for consumers to choose from that seek to imitate or replace meat. Newer plant based products aim to compete with meat in the meat case or on restaurant menus, though industry confidence remains high that meat will maintain its popularity thanks to its great taste, natural nutrition and integral role in our food culture.

#13: Americans Still Love Meat

USDA estimates Americans will eat a [record amount of meat](#) and poultry in 2018 as demand remains strong. Meat consumption typically ebbs and flows from year to year primarily based on prices. During times when prices are higher, consumption may slightly decline. This has been a trend for many years and is further backed by many studies consistently showing that 95 percent of Americans enjoy meat.

For more information, contact:

Janet Riley
Senior Vice President of Public Affairs
202/587-4245
jriley@meatinstitute.org

Eric Mittenthal
Vice President of Public Affairs
202/587-4238
emittenthal@meatinstitute.org

www.MeatInstitute.org

From: [Bill Even](#)
To: [Dave Pyburn](#)
Subject: RE: Morning Agriculture: Swine fever and the trade war — Let's play the (cell-based meat) name game — Dairy asks USDA for greater trade aid — The 'new order' of food and ag
Date: Thursday, October 25, 2018 8:19:00 AM

Excellent point

From: Dave Pyburn
Sent: Thursday, October 25, 2018 7:18 AM
To: NPB Senior Leadership Team <NPBSeniorLeadershipTeam@pork.org>
Cc: Adria Huseh <ahuseh@pork.org>; Belk, Keith <Keith.Belk@ColoState.EDU>; Steve Weiss <steve@nutriquest.com> <steve@nutriquest.com>
Subject: RE: Morning Agriculture: Swine fever and the trade war — Let's play the (cell-based meat) name game — Dairy asks USDA for greater trade aid — The 'new order' of food and ag

<https://lacheftnet.wordpress.com/2018/06/10/lab-meat-more-hype-than-substance/>

Long but a good read. In case you don't reach the end:

As just described some meat, fats, and specialty applications may make some sense. Though when looking at all the parameters in the proper context, replacing beef and other ruminant meat with lab grown stem cells likely isn't the best way to utilize cell Ag technology. Blue water use might be more, so might energy use, and replacing a food that can be raised on inedible to human foods with another lab synthesized one requiring more industrially grown feed that humans can eat directly seems kind of dumb. Rather for ruminant meats, the more logically thing to do is expand regenerative practices so cattle, bison, sheep and goats can be used to improve and restore land that's degenerating and rapidly losing topsoil. For without fertile land and topsoil, it really doesn't matter what dietary pattern you follow, because we're all screwed.

Dr. Dave Pyburn
Vice President of Science and Technology
National Pork Board
1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634
Cell: (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

From: [Jamie Byrnes](#)
To: [Jill Resler](#)
Subject: RE: Moderator at MN Pork's STRETCH Conference
Date: Monday, January 15, 2018 1:14:00 PM

Jill,

Due to scheduling conflict, Bill Even is not available to moderate the conference.

Would you like for me to find another NPB executive to assist?

Jamie L. Byrnes

Executive Assistant to
Bill Even, CEO & John Johnson, COO
National Pork Board
1776 NW 114th Street
Clive, IA 50325
Phone: 515-223-2637
Fax: 515-223-2646
Email: jbyrnes@pork.org
Visit our website: www.pork.org

From: Jill Resler [<mailto:jill@mn-pork.com>]
Sent: Wednesday, January 3, 2018 12:05 PM
To: Bill Even <BEven@pork.org>; Jamie Byrnes <jbyrnes@pork.org>
Subject: RE: Moderator at MN Pork's STRETCH Conference

Hello Bill,

Pamela Ronald has a 6:25 flight out of MSP on 2/7.

If there would be a flight in that zone that would allow you to get to Dallas that evening I think we can make it work. I am planning on having Pamela on the road to MSP around 3:00 p.m.

We are going to screen Food Evolution (approximately 10:30 a.m. start), prepared comments from each individual, followed by the moderated discussion.

Let me know if you think this can work on your end.

Appreciate the consideration.

Jill

From: Bill Even [<mailto:BEven@pork.org>]

Sent: Wednesday, January 03, 2018 11:38 AM
To: Jill Resler; Jamie Byrnes
Subject: RE: Moderator at MN Pork's STRETCH Conference

Hi Jill:

I have Wed Feb 7 open on my calendar.

I will be in central South Dakota on Tuesday Feb 6 and could drive to Mankato the evening of Feb 6.

I need to be in Dallas, TX on Thursday morning Feb 8.

Can you send me some additional details and we can see if scheduling is possible?

Thanks much and Happy New Year,

Bill Even

Chief Executive Officer
National Pork Board
1776 NW 114th Street
Clive, IA 50325
Office Phone: 515-223-2627
Cell: (b) (6)
Fax: 515-223-3521
Email: beven@pork.org

From: Jill Resler [<mailto:jill@mnpork.com>]
Sent: Wednesday, December 27, 2017 7:02 AM
To: Bill Even <BEven@pork.org>
Subject: Moderator at MN Pork's STRETCH Conference

Bill:

Would you be willing to moderate our discussion on February 7 in Mankato between Professor Post (cultured meat), Professor Ronald (consumer perception of technology / GMO) and Eric Williams (gene editing)?

The format will be as follows:

Screening of Food Evolution
Independent comments from each individual
Facilitated panel discussion

Let me know if you are interested and available, I can share additional details if appropriate.

Appreciate the consideration.

Jill

Jill Resler

COO

Minnesota Pork Board

Minnesota Pork Producers Association

151 Saint Andrews Ct. Ste. 810

Mankato, MN 56001

Cell (b) (6)

Office: 507.345.8814

Email: jill@mnppork.com

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From: [Kylee Deniz](#)
To: [Todd Rodibaugh](#)
Cc: [Bill Winkelman](#); [Carrie Webster](#); [Karen Hoare](#)
Subject: Re: MN Pork STRETCH Conference Recap
Date: Saturday, February 10, 2018 5:49:19 PM
Attachments: [image001.png](#)

Appreciate the recap and conference agenda, Todd! I'm eager to see if MN does any follow-up/ report out of the event to its sponsors (NPB, NPPC, others).

Kylee Deniz

Director of Marketing & Producer Outreach

[515-223-2752](tel:515-223-2752)

kdeniz@pork.org

National Pork Board

[1776 NW 114th Street](#)

[Clive, Iowa 50325](#)

On Feb 10, 2018, at 8:59 AM, Todd Rodibaugh <trodibaugh@pork.org> wrote:

Hi All –

Thought I would share a brief recap of the MN Pork STRETCH Conference, which they also branded as an “Emerging Leaders” conference. Karen – please jump in with anything I missed.

Agenda Overview (see attached):

- Welcome – Intro from Jill and purpose of the conference. The MN Pork Human Capital committee targeted the age group of ~25-45 yr olds to engage and cultivate leadership. “Stretch” comes from Jill’s goal of stretching attendees’ knowledge by 10%+.
- Food Evolution Screening – Watched the Food Evolution movie.
- Prepared Comments from the Experts
 - Dr. Mark Post – Created the first cultured hamburger. Provided interesting insight and perspective on cultured meat...was obviously all in on the concept & future of it
 - Dr. Pamela Ronald – Plant geneticist that discussed genetic engineering, its benefits, and future. Pro-GMO and showed some powerful examples and applications. Her husband is an organic produce farmer, so she also has a good perspective. Both her and her husband are featured in the Food Evolution movie.
 - Eric Williams, JD – Patent attorney in the biotech field and provided a background on CRISPR technology.

We are just scratching the surface as it pertains to genetic engineering and CRISPR has the potential to be an absolute game changer. Think of it as a cut & paste mechanism for genes. Eric thinks the public perception has a dividing line of: Is foreign DNA added to create a gene edited product (if so, poor perception), or not (if so, positive perception)? Eric spoke to the NPB board last year re: CRISPR

- Panel Discussion – Lots of questions during this 1.5 hour session...probably could have gone on longer. Many questions directed at Dr. Post
- 12 + One Best Management Practices – Dr. Danny Klinefelter, Texas A&M – Presented a list of 13 mgmt practices he recommends. Had some good suggestions, although my suspicion is that most of what he talked about wasn't new to the folks in the room.
- Creating a Coaching Culture / Building Winning Teams – Nathan Jamail – Provided his framework for building a winning culture....had a "rah rah" style but it worked for him and my impression was that he was the favorite speaker of the attendees. To his credit, after Jill booked him, he came to MN and toured farms & a packing plant so he had an understanding of his audience. Attendees all received a copy of his book *The Leadership Playbook*. His material on culture could have application to barn culture

Notes & Observations:

- Attendance was close to 80 and all the major players in MN had representation there. Jill used their website & newsletter to communicate the conference. I think she also reached out directly to a few systems
- No cost to attend and MN Pork picked up hotel rooms. Lunch, heavy hors d'oeuvres, and bfast were included.
- There were no formal introductions of attendees nor where there nametags available. I assume that most people knew each other, but a few of the folks that I talked to said they knew no one.
- NPB, as a sponsor, was not formally recognized. I do not know if there were other sponsors. NPPC had 3 staff there
- Several had already seen the Food Evolution movie (I had not). No formal discussion afterward about the movie
- I think most people loved the conference. I'd expect MN Pork to continue this
- I could see this as a model for others states
- No policy or regulatory discussion – all focused on emerging issues, mgmt. practices, and building positive culture

National Pork Board

317.489.1552

[<image001.png>](#)

See how We Care at www.Pork.org

Please conserve our natural resources, think twice before you print this e-mail.

<MN Pork Stretch Conference - Agenda.pdf>

STRETCH

Wednesday, February 7, 2018

9:30 a.m. Registration Begins

10:00 a.m. Welcome

Jill Resler, COO Minnesota Pork Board / Minnesota Pork Producers Association

10:10 a.m. Food Evolution Screening

Amidst a brutally polarized debate marked by passion, suspicion and confusion, FOOD EVOLUTION, by Academy Award®-nominated director Scott Hamilton Kennedy explores the controversy surrounding GMOs and food. Traveling from Hawaiian papaya groves, to banana farms in Uganda to the cornfields of Iowa, the film, narrated by esteemed science communicator Neil deGrasse Tyson, wrestles with the emotions and the science driving one of the most heated arguments of our time.

11:30 a.m. Lunch

Noon Prepared Comments from the Experts

Professor Mark Post – Cultured Meat

Professor Post is a Dutch pharmacologist who is a Professor of Vascular Physiology at Maastricht University and Professor of Angiogenesis in Tissue Engineering at the Technical University of Eindhoven. In 2008 he was the first in the world to present proof of concept for cultured meat.



Professor Pamela Ronald – 'Serving up science: plant genetics and the future of food'

Professor Ronald is a plant pathologist and geneticist. She is a professor in the Genome Center and the Department of Plant Pathology and founding faculty director of the Institute for Food and Agricultural Literacy (IFAL), all at the University of California, Davis. Ronald co-authored the book *Tomorrow's Table: Organic Farming, Genetics and the Future of Food* with her husband, Raoul Adamchak.



Eric E. Williams, Pharm.D., J.D. – Gene Editing

Eric Williams is a partner in the Indianapolis office of Barnes & Thornburg LLP and a member of the firm's Intellectual Property Law Department. His practice is focused on preparing and prosecuting patent applications through the United States Patent and Trademark Office and counseling clients on the protection of intellectual property. He is a member of the firm's Food, Drug, and Device Law Practice Group, and in this regard has provided advice to multiple clients in the pharmaceutical industry and prepared patent term extension (PTE) applications for FDA-approved products.



1:30 p.m. Break

2:00 p.m. Panel Discussion

Moderator: Brian Foster

Brian Foster is the founder and Principal of Insight Enterprise Consulting, LLC, a government affairs management and international agribusiness development consulting firm.

Panelists:

- *Professor Mark Post*
- *Professor Pamela Ronald*
- *Eric Williams*

3:30 p.m. Break

4:00 p.m. 12 + One Best Management Practices: Practices Anyone Could Do, But 98% Don't
Dr. Danny Klinefelter

5:30 p.m. Networking Social Hour

Thursday, February 8, 2018

7:00 – 8:00 a.m. Breakfast

8:00 a.m. Nathan Jamail

Nathan is the author of three bestselling books and has spent the last two decades helping and coaching leaders and organizations on how to build winning cultures and helping great leaders become great coaches. Nathan understands the difficulties that many leaders face in balancing the job of running the business and developing employees. As a business leader in corporate America and a small business owner for over 20 years, Nathan has a great deal of personal experience in the role of a leader and a coach.

Noon Closing Comments

From: [Cindy Cunningham](#)
To: [Hannah Thompson-Weeman](#)
Cc: [Mike Martin](#); [Janet Riley](#); [Eric Mittenhal](#); [Dave Warner](#); [Tom Super](#) (tsuper@chickenusa.org); [Keith Williams](#); [Gwen Venable](#); [Daren Williams](#); [Kay Johnson](#); chaduep@unitedegg.com
Subject: Re: Mercy For Animals gets new leader
Date: Friday, January 12, 2018 2:05:55 PM

I missed that Thanks for sharing!

Cindy Cunningham
Assistant Vice President, Communications
National Pork Board
515-210-1263
Sent from my iPhone

On Jan 12, 2018, at 12:28 PM, Hannah Thompson-Weeman <htompson@animalagalliance.org> wrote:

Thanks, Mike Also worth noting that Paul Shapiro is no longer with HSUS as of 1/2/18 His Twitter, LinkedIn and Facebook page all list his job as "author of "Clean Meat"" (his book on cultured meat that came out this month)

On Jan 12, 2018, at 1 08 PM, Michael Martin (Protein & Salt Shared Resources CPS not part of a BU (026)) <Michael.Martin@cargill.com> wrote:

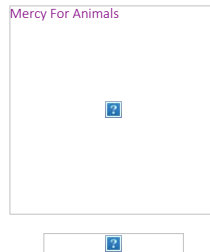
Of interest. The 9-minute video is worth the time. In 2018, MFA is going to focus on chicken and fish, and will be pushing hard on a California animal cruelty law. They are also going to go after foodservice companies and retailers to force more change and showed a McDonald's image. Additionally, they will be stepping up activities in India and China.

Matt Rice is taking over day-to-day activities from Nathan Runkle. Rice is the one who has led the undercover video efforts in recent years.

In case you are wondering, "James" is one of Cargill's monitoring team members in Minneapolis.

Mike Martin
Director of Communications
Cargill Protein
Helping the world thrive
316-291-2126
Wichita, Kansas / michael_martin@cargill.com

MFA founder Nathan Runkle is removing himself from day-to-day operations to focus on launching new companies and initiatives. Executive Vice President Matt Rice will become MFA's new president.



Dear James,

When I started Mercy For Animals nearly 20 years ago, I was a kid from the Midwest with a big dream and an unwavering determination to help animals. Building MFA was not easy. Our first meeting had three attendees. We had no money. But as we grew, I surrounded myself with incredible supporters like you, passionate volunteers, and committed colleagues.

MFA is the most meaningful endeavor of my life so far. My journey has been moving and inspiring. Working alongside such brilliant colleagues and implementing our shared vision of a kinder world for farmed animals has been an honor. Together, we have built MFA into the powerful organization it is today—one that achieves groundbreaking successes as the result of teamwork.

As MFA has grown in the past few years, I've found the personal and creative space to think about how I can best continue to shape our movement—and help more animals. This space led me to launch [Circle V](#), the first vegan animal rights music festival, and to conceptualize and co-found [The Good Food Institute](#), an organization that supports innovation in food and science to produce alternatives that are superior to animal products.

James, I've determined that I can be most effective right now by helping launch exciting new companies and initiatives. This means remaining in this creative, big-picture space and handing over much of the day-to-day operations at MFA to other skilled and respected leaders within the organization.

I'm proud to announce that our executive vice president, Matt Rice, has been promoted to president of MFA. I will continue to serve MFA as chair of the board of directors and will remain intimately involved in strategic decisions as the organization's founder.

For more than 15 years, Matt Rice has been a central leader in the animal protection movement. He shares my vision for MFA and has implemented it with determination, tireless dedication, and compassion for animals and people.

Matt began in MFA's New York office carrying out grassroots outreach before being promoted to director of operations. He later moved to Los Angeles to take over as director of investigations, working closely with our brave [undercover investigators](#). Matt has overseen many of MFA's biggest cases, most successful campaigns, and [other victories](#). As executive vice president, he has overseen [all](#)

[departments.](#)

Click below to watch a video about Matt and MFA's priorities for 2018.



Matt is steadfast in his commitment to MFA. He is an ideal team player with sound judgment—a true powerhouse for animals. I trust him completely.

Matt is already working with her senior MFA leaders to implement new systems and structures, and we will launch compelling new campaigns this year. Matt is supported by a team of some of the best activists I've ever met.

I know that MFA will continue to break barriers and exceed expectations worldwide. Much remains to be done for animals, but we've proved time and again that for a movement built on love and persistence, no company is too powerful, no factory farm too big, and no government too mighty.

I've never been more optimistic about the future of MFA and our movement. Our greatest victories are still ahead.



Onward!



Nathan Runkle
Founder

[8033 SUNSET BLVD, SUITE 864 | LOS ANGELES, CA 90046](#) | [866.632.6446](#)

Please conserve our natural resources, think twice before you print this e-mail.

From: [Adria Huseeth](#)
To: [Dave Pyburn](#)
Subject: Fwd: Lab-grown meat vs meat and the environment
Date: Thursday, February 21, 2019 9:05:54 AM
Attachments: [J Lynch - Cultured Meat & Beef.pdf](#)
[ATT00001.htm](#)

See study on lab meat Phil passed along.

Sent from my iPhone

Begin forwarded message:

From: Phil Lofgren <(b) (6)>
Date: February 20, 2019 at 10:21:49 PM CST
To: Adria Huseeth <AHuseeth@pork.org>
Subject: Lab-grown meat vs meat and the environment

FYI -

The IFT Weekly newsltr noted a new paper of potential interest - **Climate Impacts of Cultured Meat and Beef Cattle**. A study from the UK.

Attached are: the study summary and a PDF copy of the full paper.

For your "lab-grown meat" files.

Phil

Phil Lofgren, Ph.D.
Consultant, NPB Nutrition Research

Contact Info:

Cell #: (b) (6)

Email: (b) (6)

Is lab-grown meat really better for the environment?

Improved greenhouse gas (GHG) emission efficiency of production has been proposed as one of the biggest potential advantages of cultured meat over conventional livestock production systems. A study published in *Frontiers in Sustainable Food Systems* suggests that cultured meat may not be as climatically superior to cattle as previous research has led us to believe.

Previous studies had tended to look at the various emissions from cattle and converted them all to their carbon dioxide equivalent. However,

according to the scientists from the Oxford Martin School, this doesn't give the full picture since methane and nitrous oxide have different impacts on the climate. Gases differ both in the amount they change the atmospheric energy balance (radiative forcing), and hence lead to warming, and how long they persist in the atmosphere. Per molecule, methane results in significantly greater radiative forcing than carbon dioxide but has an atmospheric lifespan of only around 12 years in contrast to carbon dioxide that can persist in the atmosphere for millennia. Nitrous oxide has a much greater radiative forcing per molecule than both methane and carbon dioxide, and an atmospheric lifetime of just over 100 years.

The scientists used a simple climate model that simulates the different behaviors of carbon dioxide, methane, and nitrous oxide to evaluate warming impacts. They compared the temperature impact of beef cattle and cultured meat production over the next 1,000 years using four synthetic meat GHG footprints currently available in the literature and three different beef production systems studied in an earlier climate modeling paper.

The researchers found that cattle systems are associated with the production of all three GHGs above, including significant emissions of methane, while cultured meat emissions are almost entirely carbon dioxide from energy generation. Under continuous high global consumption, cultured meat results in less warming than cattle initially, but this gap narrows in the long term and in some cases cattle production causes far less warming, as methane emissions do not accumulate, unlike carbon dioxide.

The researchers also modeled a decline in meat consumption to more sustainable levels following high consumption and found that although cattle systems generally result in greater peak warming than cultured meat, the warming effect declines and stabilizes under the new emission rates of cattle systems, while the carbon dioxide-based warming from cultured meat persists and accumulates even under reduced consumption, again overtaking cattle production in some scenarios.

The researchers concluded that cultured meat is “not *prima facie* climatically superior to cattle; its relative impact instead depends on the availability of decarbonized energy generation and the specific production systems that are realized.”

Study



Climate Impacts of Cultured Meat and Beef Cattle

John Lynch* and Raymond Pierrehumbert

Atmospheric, Oceanic, and Planetary Physics, Department of Physics, University of Oxford, Oxford, United Kingdom

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Improved greenhouse gas (GHG) emission efficiency of production has been proposed as one of the biggest potential advantages of cultured meat over conventional livestock production systems. Comparisons with beef are typically highlighted, as it is a highly emissions intensive food product. In this study, we present a more rigorous comparison of the potential climate impacts of cultured meat and cattle production than has previously been made. Warming impacts are evaluated using a simple climate model that simulates the different behaviors of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), rather than relying on carbon dioxide equivalent (CO_2e) metrics. We compare the temperature impact of beef cattle and cultured meat production at all times to 1,000 years in the future, using four synthetic meat GHG footprints currently available in the literature and three different beef production systems studied in an earlier climate modeling paper. Cattle systems are associated with the production of all three GHGs above, including significant emissions of CH_4 , while cultured meat emissions are almost entirely CO_2 from energy generation. Under continuous high global consumption, cultured meat results in less warming than cattle initially, but this gap narrows in the long term and in some cases cattle production causes far less warming, as CH_4 emissions do not accumulate, unlike CO_2 . We then model a decline in meat consumption to more sustainable levels following high consumption, and show that although cattle systems generally result in greater peak warming than cultured meat, the warming effect declines and stabilizes under the new emission rates of cattle systems, while the CO_2 based warming from cultured meat persists and accumulates even under reduced consumption, again overtaking cattle production in some scenarios. We conclude that cultured meat is not *prima facie* climatically superior to cattle; its relative impact instead depends on the availability of decarbonized energy generation and the specific production systems that are realized.

Keywords: cultured meat, beef, cattle, greenhouse gas, climate, sustainability

INTRODUCTION

Cultured meat is an emerging technology in which animal muscle cells are produced through tissue culture in a controlled factory or laboratory environment, in contrast to traditional whole-animal livestock systems (Stephens et al., 2018). Other commonly used terms include clean, *in vitro*, lab-grown, or synthetic meat. Reducing the environmental impacts of meat production, and particularly greenhouse gas (GHG) emissions, is generally highlighted as a significant potential advantage of cultured meat (Tuomisto and Teixeira de Mattos, 2011; Post, 2012). Despite recent research and popular interest in cultured meat, and the frequency with which its supposed climate

benefits are reported, the potential temperature impacts of cultured meat production have not yet been investigated.

Livestock production systems are associated with a number of GHG emissions, and have made a significant contribution to anthropogenic climate change (Reisinger and Clark, 2018). Broadly, the livestock themselves result in emissions of methane (CH₄) and nitrous oxide (N₂O) from their manures, and further methane from enteric fermentation in ruminants. Further GHGs associated with, but not directly emitted by, animal production include the loss of nitrous oxide from fertilizer application to grow their feed, carbon dioxide (CO₂) emissions from the conversion of land for pasture or feed production, and CO₂ emissions resulting from fossil fuel based energy generation, for example in tractor fuels or the manufacture of fertilizers (in addition to by-product CO₂ also formed in fertilizer production, Dawson and Hilton, 2011). While there is a very large range in emissions associated with different animal production systems, they are generally shown to emit significantly more per unit of food output (for example emissions per kg final product or per kg protein) than plant-based systems, and beef is typically highlighted as among the most emission intensive food products (Clune et al., 2017; Poore and Nemecek, 2018).

Proponents of cultured meat have suggested that bypassing the wider biological processes of the whole animal can result in lower emissions per unit of meat produced, as the direct animal emissions are avoided, and cultured systems could be designed to more efficiently convert inputs into the desired output (meat), thus minimizing the emissions associated with the production of these inputs. A trade-off may exist in significant energy demand to maintain the controlled manufacturing environment that essentially replaces some of the animal's biological functions (Mattick et al., 2015b); and large uncertainties remain in what viable, animal-free, growth media may look like (Stephens et al., 2018) and hence their potential resource demand.

Despite the remaining unknowns in large-scale cultured meat production, a small number of studies have undertaken speculative life cycle assessments (LCA) to predict the environmental footprint of cultured meat (Tuomisto and Teixeira de Mattos, 2011; Tuomisto et al., 2014; Mattick et al., 2015b; Smetana et al., 2015). The suggested GHG emissions per unit of cultured meat produced ("carbon footprints") vary significantly, as they are based on different production systems and assumed inputs, and take alternative approaches in anticipating future developments. Nonetheless, the GHG emissions per unit of cultured meat are uniformly shown as superior to that of beef where this comparison is made (trends are less clear for other animal products).

To date, these comparisons (and most others evaluating the relative emissions intensity of different products or activities) are based on carbon dioxide equivalent (CO₂e) metrics that relate the emissions of different GHGs to carbon dioxide. However, such metrics may be misleading, and provide a poor indication of actual temperature response (Pierrehumbert, 2014). Individual gases differ both in the amount they change the atmospheric energy balance (radiative forcing), and hence lead to warming, and how long they persist in the atmosphere. Per molecule, methane results in significantly greater radiative

forcing than carbon dioxide, but has an atmospheric lifespan of only around 12 years (Myhre et al., 2013) in contrast to the millennial persistence of carbon dioxide (Archer and Brovkin, 2008). Nitrous oxide has a much greater radiative forcing per molecule than both methane and carbon dioxide, and an atmospheric lifetime of just over 100 years (Myhre et al., 2013). The most commonly used carbon dioxide equivalence metric, the 100-years Global Warming Potential (GWP₁₀₀), equates each gas by integrating the amount of radiative forcing that a one-off emissions pulse would exert over a 100-years period (Myhre et al., 2013). If we are to consider the climate effects of ongoing production, however, we need to consider the impact of continued emissions rates of each gas. GWP₁₀₀ based comparisons, among other limitations, do not sufficiently capture the temporal behavior of different gases, and in particular fail to express the cumulative nature of continued carbon dioxide emissions, and hence can relatively overstate the warming impact of methane (Pierrehumbert, 2014). Additionally, due to the short lifetime of methane, any warming it causes is largely undone shortly after emissions are removed, in contrast to carbon dioxide. Inferring relative temperature impacts from GWP₁₀₀ footprints can therefore be especially problematic where short-lived gases such as methane constitute a significant proportion of emissions, as is the case for beef production.

This paper presents the first attempt to compare the potential climate impacts of cultured meat and beef cattle production using an atmospheric modeling approach, rather than relying on carbon dioxide equivalent comparisons. We test a number of cultured meat and beef system emissions footprints under three alternative consumption pathways, comparing the temperature impacts under different production and consumption scenarios at all timescales to 1,000 years.

METHODS

In order to ensure standardization, the atmospheric models, consumption pathways, and representative cattle production emissions all follow Pierrehumbert and Eshel (2015).

A literature review was undertaken in April 2018 to screen for cultured meat emissions footprints. As considerable uncertainty remains over what real, large-scale cultured meat production may look like, four different footprints found in this literature review were used to illustrate some of the possibilities.

The first cultured meat LCA study, presented in Tuomisto and Teixeira de Mattos (2011), hypothesized a system in which animal embryonic stem cells are grown in a cylindrical stirred tank bioreactor in a medium of cyanobacteria hydrolysate (as the main "feed" input), vitamins and animal growth factors. Animal growth factors are produced from genetically engineered *Escherichia coli*, and both growth factors and vitamins are considered to be required in negligible volumes, and hence incur negligible environmental impacts (including GHG emissions). The cyanobacteria production is assumed to take place in an open pond, with some synthetic nitrogen use considered in the default case, but either nitrogen-fixing cyanobacteria or "nutrient-rich wastewater" used to eliminate the need for fertilizer inputs

in the most optimistic scenarios. Greenhouse gas emissions result primarily from energy use and transport in growing and moving the cyanobacteria to the site of cultured meat production, followed by energy use in cyanobacteria processing and stirring the cell culture tank for 60 days. Residual heat following cyanobacteria hydrolysate sterilization initially warms the culture medium, and following this it is assumed heat generated by the metabolism of cells growing in the culture negates the need for external heating. Greenhouse gas footprints were then estimated based on the conditions and emissions per unit of energy use for three representative regions (Thailand, California, and Spain), with emissions from electricity generation lowest in Thailand and highest in California. The cultured meat output assumed as the functional unit was a “minced-beef type” product with equivalent protein content to low fat meat. For further details see Tuomisto and Teixeira de Mattos (2011). Following through the assumed yields and allocation conventions used in this study (see discussion below), the average emissions footprint was approximately 2.01 kg CO₂e per kg cultured meat. As this study represents the most optimistic scenario, we use the lowest value presented in the sensitivity analysis of 1.69 kg CO₂e per kg cultured meat, assuming no fertilizer use was necessary for cyanobacteria production and electricity generation uses the lowest Thai emissions footprint. It was not possible to separate out individual greenhouse gases, and so it is assumed that the entire footprint is carbon dioxide emissions. As there was no fertilizer use in the footprint used, and in alternative footprints below other emissions represent relatively small proportions of the total footprint, this assumption is unlikely to significantly affect the results.

The second cultured meat footprint used in this study was obtained from Tuomisto et al. (2014). The hypothesized systems are largely as described above from Tuomisto and Teixeira de Mattos (2011), but with some refinements made to the assumed operation of the bioreactor, and a number of plant-based alternative feedstocks considered in addition to cyanobacteria. Wheat or maize feedstocks were assumed to have been grown with the GHG footprints of typical UK production from Williams et al. (2006) and sterilized and hydrolyzed as described above for cyanobacteria. A hollow capillary bioreactor was selected to represent a superior option to the stirred cylinder design above, but in this case also included an energy input in maintaining growth temperature (37°C) for cultured cells. As this study still represents an optimistic but potentially more realistic footprint than suggested by Tuomisto and Teixeira de Mattos (2011), an intermediate value of 3.67 kg CO₂e per kg cultured meat was selected from the range of results presented, assuming maize feedstock (with a greater production footprint than cyanobacteria but less than wheat), and an average of the best- and worst-case bioreactor yield scenarios. This footprint is also assumed to be composed entirely of carbon dioxide emissions. In practice, nitrous oxide emissions would also be expected from a proportion of the nitrogen inputs in growing maize, but it was not possible to separate out this component of emissions. The omission is again considered unlikely to significantly influence conclusions, as discussed below in the context of results for other cultured meat systems.

The remaining two cultured meat footprints were both taken from Mattick et al. (2015b). In this study, a two-step culturing process is assumed: after 5 days of proliferation of muscle stem cells, the bioreactor is drained and filled with a different medium for 72 h of cell differentiation and mass gain. It is assumed that the main constituents of the culture media are peptides and amino acids from soy hydrolysis, glucose from corn starch, and again a negligible volume of growth factors. In contrast to the more speculative approach of the two papers above, this study bases its assumptions on the metabolic requirements and yields of cultured meat on data from Chinese Hamster Ovary (CHO) cell proliferation (Sung et al., 2004), as a previously tested analog for cell culture conditions. Corn starch microcarrier beads provide a scaffold around which cells proliferate, and the process is assumed to take place within stirred-tank bioreactors. Energy is required for aeration, mixing and temperature regulation during the culture phase. Finally, the bioreactors are cleaned between each culture batch by rinsing with sodium hydroxide and heating to 77.5°C. See Mattick et al. (2015b) for further details. As more optimistic estimates were already demonstrated in the two papers above, the average cultured meat footprint was used rather than the low end of the sensitivity analysis. This GHG footprint was 6.64 kg CO₂, 0.019 CH₄, and 0.0013 kg N₂O, giving a total GWP₁₀₀ footprint of 7.5 kg CO₂e per kg cultured meat (disaggregated emissions from Carolyn Mattick, pers. comm.).

To represent the upper end of proposed emissions footprints for cultured meat production, the result from the high end of the sensitivity analysis in Mattick et al. (2015b) was also used. Here, lower cell densities are achieved at the end of the proliferation phase, no further biomass growth is achieved in the differentiation phase, and the biomanufacturing facility building size and energy footprint are treated as comparable to a pharmaceutical plant, rather than a brewery as in the default scenario. This resulted in a footprint of 25 kg CO₂e per kg cultured meat. It was not possible to extract the individual gas composition from the sensitivity analysis, but for this study we assume that the gases constitute the same proportions as in the baseline case, resulting in 22.1 kg CO₂, 0.062 CH₄, and 0.0043 kg N₂O per kg cultured meat.

A further emissions footprint for cultured meat is also provided by Smetana et al. (2015), but as some details regarding the functional unit, system boundaries and production methods assumed in this study were unclear, and the carbon dioxide equivalent footprint presented was similar to the result at the high end of the sensitivity analysis in Mattick et al. (2015b), it was not used in this study.

Three representative beef footprints were used following Pierrehumbert and Eshel (2015) to illustrate some of the variation in quantity and composition of emissions associated with contemporary beef production systems (Table 1). The lowest footprint for all gases is demonstrated by production at an organic Swedish ranch from Cederberg and Nilsson (2004). This is an extensive, low-input (no pesticides or synthetic fertilizers, but organic pig manure imported) system that achieves birth rates of approximately one animal a year and fast weight gain, hence low methane emissions per output. An alternative footprint composition is shown in the Brazilian pasture system

TABLE 1 | Emissions profiles of cultured meat and beef cattle production, expressed as individual gases and total IPCC 5th Assessment Report 100-Years Global Warming Potential carbon dioxide equivalent (GWP₁₀₀ CO₂e) per kg of meat output (either cultured meat or bone free beef).

Production system	Annotation	CO ₂	CH ₄	N ₂ O	GWP ₁₀₀ CO ₂ e
CULTURED MEAT					
Tuomisto and Teixeira de Mattos (2011)—low	Cultured-a	1.69			1.69
Tuomisto et al. (2014)—average	Cultured-b	3.67			3.67
Mattick et al. (2015b)—average	Cultured-c	6.64	0.019	0.0013	7.5
Mattick et al. (2015b)—high	Cultured-d	22.1	0.062	0.0043	25
BEEF CATTLE					
Swedish ranch	Sweden	0.90	0.8	0.02	28.6
Brazilian pasture	Brazil	0.90	1.2	0.03	42.45
USA Midwestern pasture	Mid-West USA	5.4	0.8	0.06	43.7

from Cederberg et al. (2009), which is also an extensive, low-input system, but methane emissions per unit beef produced are significantly greater due to slower animal weight gain. CO₂ emissions from production are likely actually lower than in the Swedish case (rather than equal, as shown in the table) as this footprint includes emissions resulting transport from Brazil to Europe; however, these are more than offset by likely emissions resulting from deforestation, which are not included here but returned to in the discussion. Finally, the highest beef footprint included is a pasture system in the Midwestern USA from Pelletier et al. (2010). This system also achieves relatively fast animal weight gain, and so methane emissions are equivalent to the Swedish system, but this is achieved through an energy and input intensive management that results in high carbon dioxide and nitrous oxide emissions. For further details see Pierrehumbert and Eshel (2015) and the original studies referenced. Two further footprints demonstrating emissions from a Midwestern USA feedlot and the average for Swedish beef production included in Pierrehumbert and Eshel (2015) were omitted from this study for clarity, as they provided intermediate emission profiles that were similar to those described above.

As these beef footprints are not completely harmonized (e.g., the emissions incurred in the transport of Brazilian beef to Europe noted above), the emissions described for each system may represent methodological differences between studies, such as different system boundaries, co-product allocations and LCA databases, rather than differences between the beef production systems themselves. Comparing individual LCA studies can be problematic, even for the same product (de Vries et al., 2015), and there are significant challenges in standardizing agricultural LCAs (Adewale et al., 2018). For the purposes of this study, these footprints provide contrasting case-studies with a different balance of GHG emissions to illustrate the distinct climate impacts of each gas, but should not necessarily be taken as globally representative or definitive, standardized beef LCAs.

Emissions footprints for every system are shown in **Table 1**. It should be noted that all cultured meat carbon dioxide equivalent footprint estimates, including the high end of the sensitivity analysis, are lower than those of every cattle system in this study.

Consumption Pathways

Three alternative consumption pathways were used to illustrate the dynamics resulting from the alternative GHG footprints, with impacts from all systems shown for 1,000 years.

The first scenario is based on constant, very high levels of meat consumption: 25 kg per capita per annum (roughly the contemporary beef consumption rate in the USA) for a population of 10 billion. This pathway is intended to explore the temperature impacts of unrestrained consumption and illustrate the distinct climate impacts of different greenhouse gases under sustained emissions. (Note that here and for all other scenarios, we only model aggregated global totals, and the consumption described is assumed to lead directly to the associated production (and hence emissions). We do not address issues surrounding, for example, food waste, access, and distribution, despite their importance in designing a sustainable food system (Garnett, 2013), as our focus is on demonstrating the relevant climatic principles).

The second scenario assumes the same very high consumption rates for the first 100 years, followed by an exponential decline, i.e., consumption is a function of time $C(t)$ such that:

$$C(t) = C_m \quad \text{if } t \leq t_m, \quad (1)$$

$$C(t) = C_m e^{-(t-t_m)/\tau} \quad \text{if } t > t_m \quad (2)$$

where C_m is the peak (and in this scenario, also initial) consumption rate, which declines after time t_m (=100 years) with time constant, $\tau = 50$ years. This scenario illustrates the difference between long-term warming impacts of each gas when their emissions decline toward 0.

The third scenario presents a more realistic demonstration and attempts to illustrate a potentially sustainable space for meat consumption. Meat consumption starts at a rate approximately equal to current global consumption (5.55 kg per capita per annum for a population of 7.3 billion, following Pierrehumbert and Eshel, 2015), then increases exponentially to reach a peak consumption rate of 25 kg per capita per annum for a population of 10 billion after 100 years. Following this peak, consumption declines exponentially to a long-term annual consumption rate

(C_∞) equivalent to 75% of current global consumption. Beef consumption is therefore defined as:

$$C(t) = C_m e^{-(t-t_m)^2/\delta^2} \quad \text{if } t \leq t_m, \quad (3)$$

$$C(t) = \max(C_\infty, C_m e^{-(t-t_m)^2/\delta^2}) \quad \text{if } t > t_m \quad (4)$$

where C_m is again the peak consumption rate, occurring in this case at time t_m (again 100 years here), reached at a rate governed by δ , where $\delta = t_m(\ln(\frac{C_m}{C_0}))^{-0.5}$ such that the initial consumption rate, C_0 is as described above.

Climate Modeling Approach

Temperature responses were derived using an energy-balance climate modeling approach following Pierrehumbert and Eshel (2015). Annual emissions of each gas, as determined by the system type and consumption trajectories described above, are used to determine the change in radiative forcing and consequently warming over time.

Carbon dioxide forcing was calculated using a function that models change in atmospheric concentration of CO_2 , incorporating ocean uptake, and a logarithmic relationship between changes in CO_2 concentration and resultant forcing (following Pierrehumbert, 2014). For CH_4 and N_2O , atmospheric concentrations were calculated assuming the gases persist in the atmosphere for 12 and 114 years, respectively, with forcing derived from these concentrations using linearized radiative efficiency coefficients from Forster et al. (2007). For CH_4 this forcing was increased by a factor of 1.45 to incorporate stratospheric water vapor amplification and positive ozone feedbacks.

The transient energy balance climate model presented in Pierrehumbert (2014) was used to calculate warming resulting from these changes in forcing. A two-box ocean system is used whereby a shallow, mixed ocean layer warms rapidly (within years) in response to changes in forcing, but the deep ocean is warmed (through this mixed layer) on a much longer timescale. This two-box ocean system has the important effect of adding a delayed warming response, which can also result in some continued warming even when forcing is stable or declining (Held et al., 2010). An equilibrium climate sensitivity of 3 K per doubling in the atmospheric concentration of CO_2 and a short-term transient climate sensitivity 2/3 of the equilibrium sensitivity were assumed. All climate model outputs are provided in a **Supplementary Table** in addition to being illustrated in the results section below.

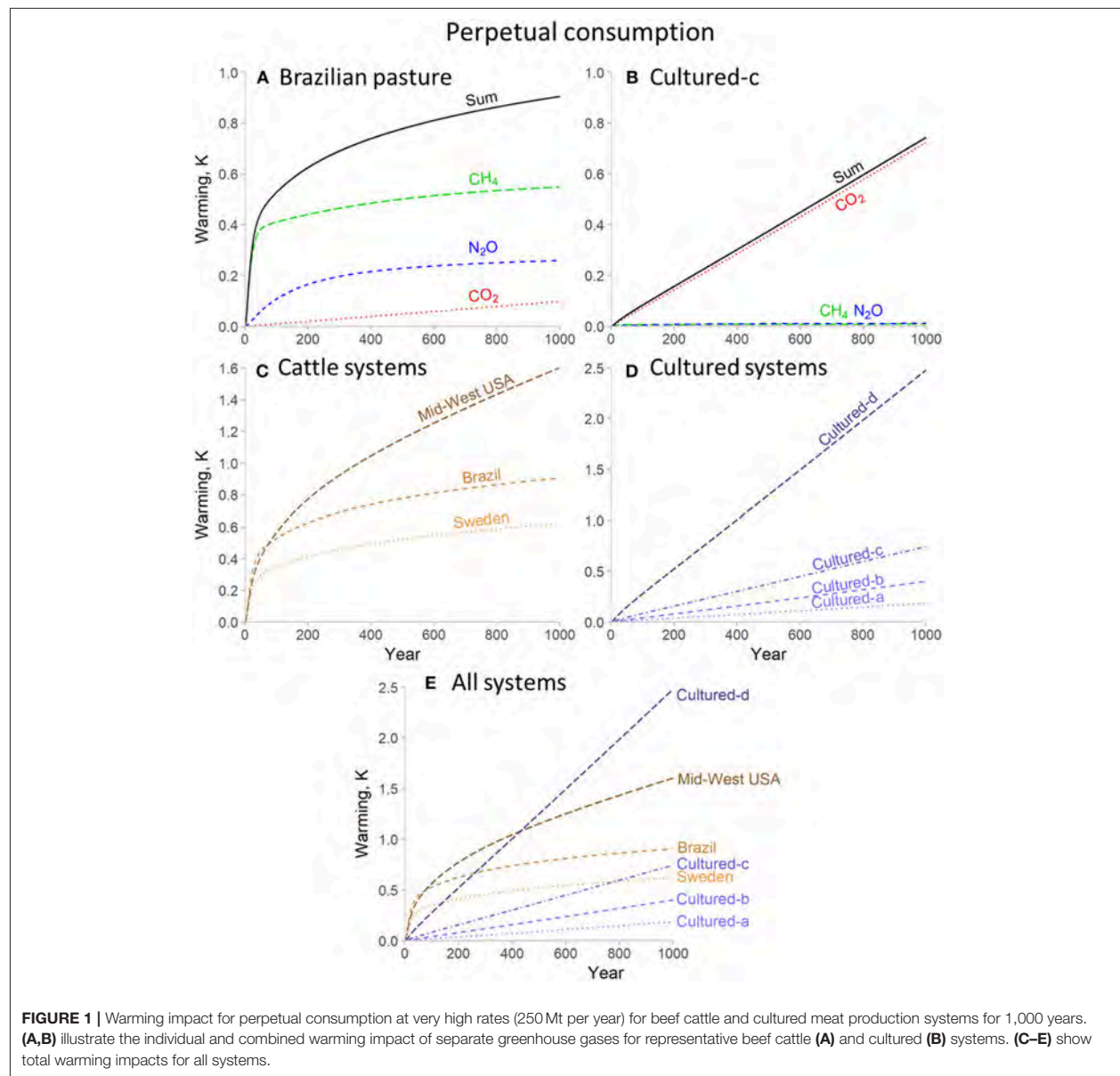
RESULTS

The first consumption pathway, continuous consumption at very high rates (**Figure 1**) illustrates the scale of warming that would result from large-scale meat production from current beef cattle or hypothesized cultured meat systems. This scenario also demonstrates the distinct climate impacts of each gas. As illustrated for the warming resulting from each gas in the Brazilian pasture system (**Figure 1A**), there is immediate,

significant warming from CH_4 , but under sustained emission rates this largely stops increasing after a few decades (by this point the atmospheric concentration of CH_4 has reached an equilibrium, and hence the forcing it results in remains the same, but there is still a slight long-term increase in warming due to the significant time lag for the temperature response of the deep ocean). This equilibrating dynamic is also observed for N_2O , but on a scale of a few centuries rather than a few decades. In contrast, as a significant proportion of CO_2 emissions persist indefinitely, no equilibrium forcing is reached for this gas, and hence warming continues to increase for as long as emissions are sustained. These dynamics are illustrated very strongly by comparing cattle to a cultured meat production system (**Figure 1B**). Cultured meat emissions of CH_4 and N_2O are relatively small and so do not significantly contribute to overall warming dynamics; instead we see a long-term perpetual increase in warming driven largely by the rate of on-going CO_2 emissions.

The wider system comparisons provide further demonstrations of these dynamics. Among the beef cattle production systems (**Figure 1C**), the Mid-Western USA pasture system shows a much greater degree of long-term warming than the Brazilian system, despite only a marginally higher carbon dioxide equivalent footprint, due to the greater proportion of CO_2 . The Swedish ranch system compares favorably to both, as the CO_2 component is low and hence we see limited long-term increase in warming, but due to greater production efficiency than the Brazilian system, CH_4 (and N_2O) emissions are also lower, and hence the forcing that results once atmospheric concentrations reach equilibrium is less. Among the cultured meat production systems (**Figure 1D**), the warming is driven largely (or entirely for “cultured-a” and “-b”) by CO_2 emissions, and so there is perpetually increasing warming, the slope of which depends on the rate of annual CO_2 emissions. Despite concerns over the potential omission of some CH_4 and N_2O emissions in the cultured-a and -b footprints as noted above, the marginal impact of these gases for cultured-c, where these data were available, suggests that overall trends would be similar.

Bringing all system types together (**Figure 1E**) we see that the two most optimistic cultured meat footprints, cultured-a and cultured-b, are sufficiently small that these systems do indeed have a lesser climate impact than cattle systems. These two cultured meat systems remain superior to even the best beef cattle production system into the very long term (1,000 years), although their relative advantage declines over time and by the end of the period modeled is significantly less than might be implied by comparing carbon dioxide equivalent footprints (cultured-a footprint = $1.69 \text{ kg CO}_2\text{e kg}^{-1} \text{ meat}$, Swedish = 28.6; but by $t = 1,000$ the temperature impacts are +0.18 and +0.62 K, respectively). The most striking example of these dynamics is provided by cultured-d, the production scenario at the high-end of the sensitivity analysis in Mattick et al. (2015b). Despite having a lower carbon dioxide equivalent footprint than all cattle systems here, within 200 years of continued production the Swedish system is superior, and by 450 years is outperformed by even the worst cattle system

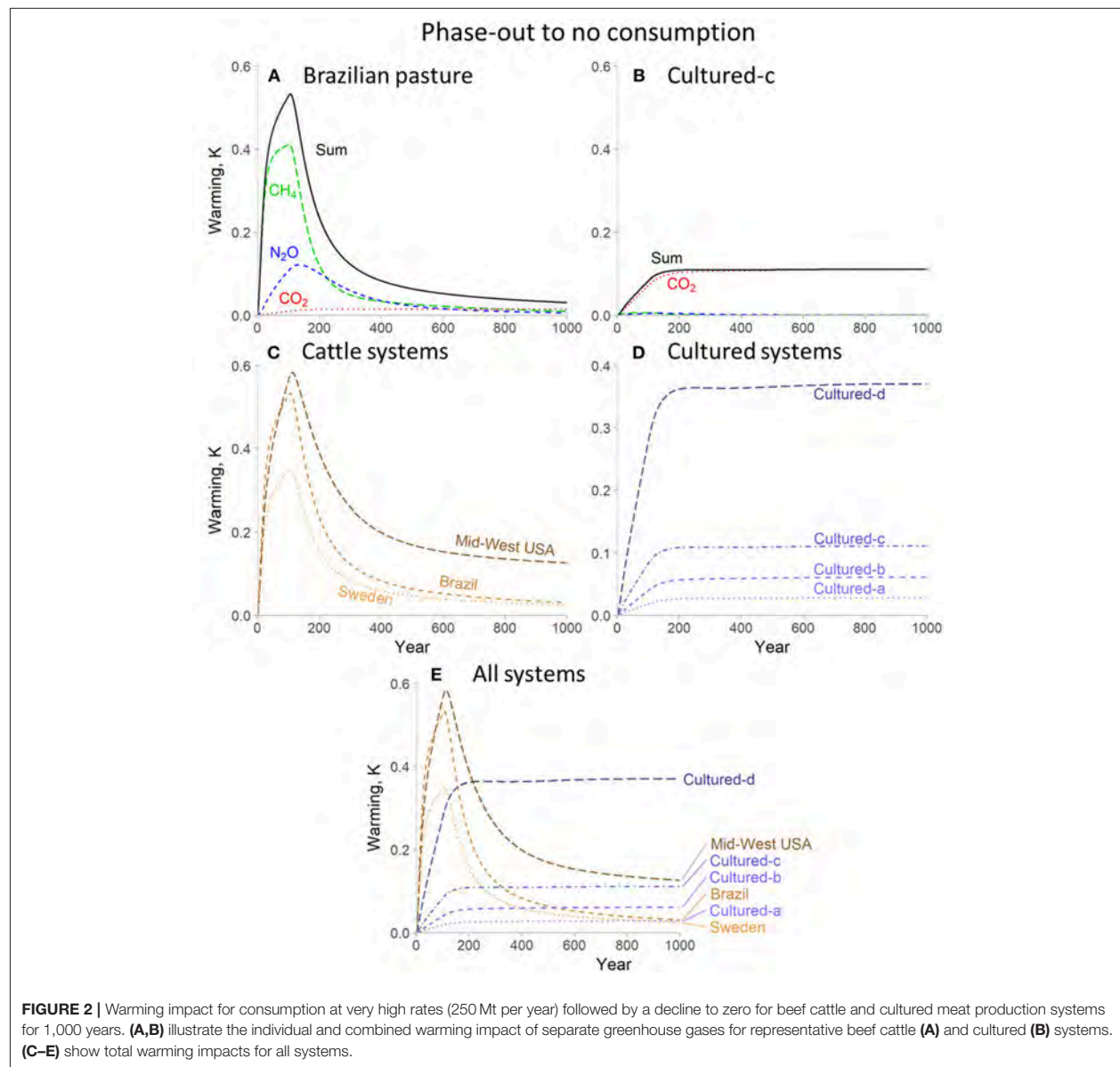


here (despite having only 57% of its carbon dioxide equivalent footprint). This system is then increasingly outperformed by all of the cattle systems the longer that production is maintained.

An alternative aspect of the different temporal dynamics of each gas is revealed by the scenarios in which production declines toward zero after 100 years, as shown in **Figure 2**. Once emissions of CH_4 and N_2O cease the warming these emissions resulted in is reversed over timescales largely dependent on the atmospheric lifespan of each gas (**Figure 2A**). In contrast, the warming due to CO_2 is not reversible within the timescales modeled here, and so warming caused

by CO_2 persists (shown more clearly in **Figure 2B**). As a result, while the warming from cattle (**Figure 2C**) systems declines, the warming from cultured meat production persists indefinitely at a fixed level based on the cumulative CO_2 emissions accrued up to the point at which production ceases (**Figure 2D**).

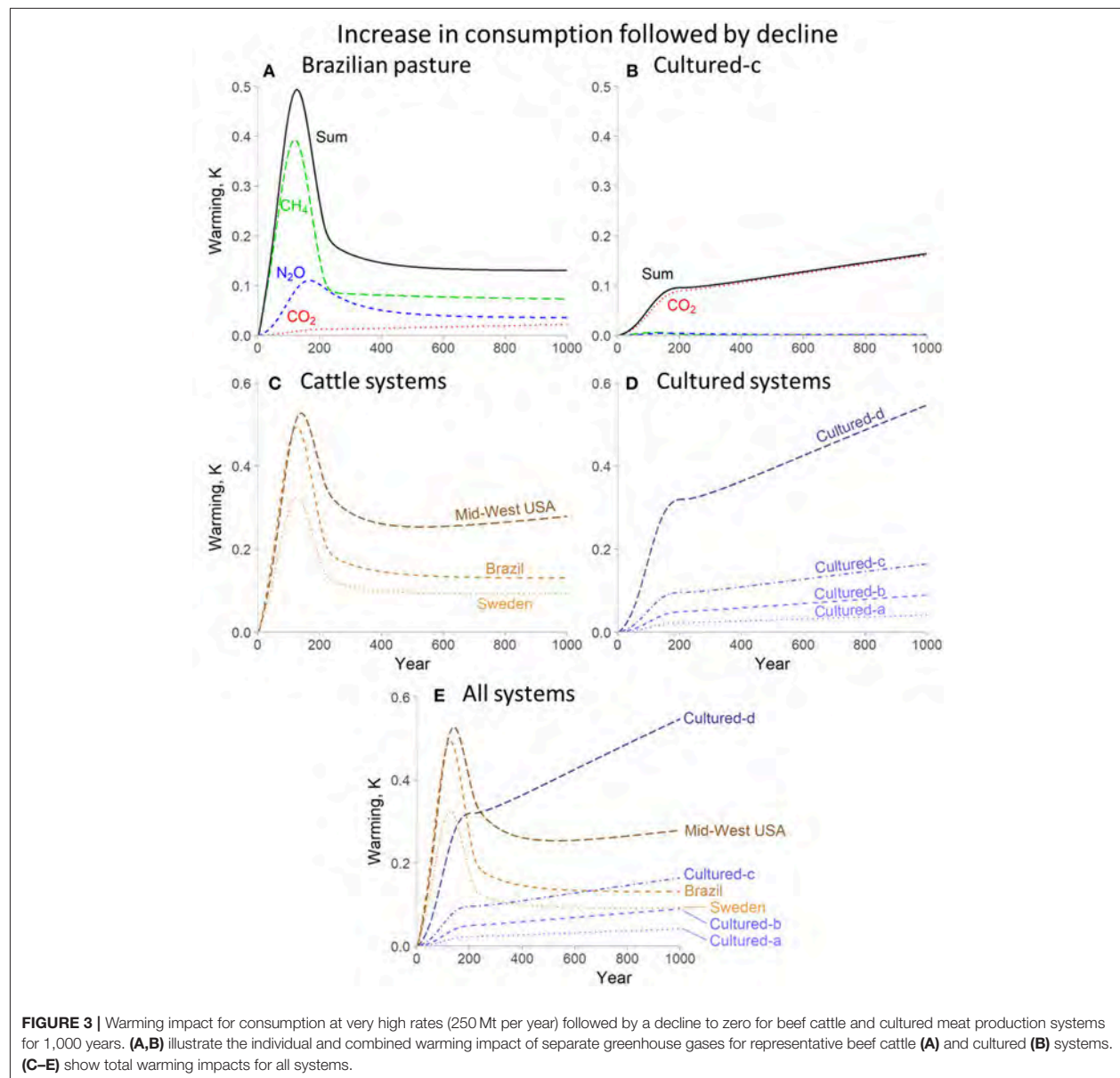
The potentially more realistic scenario of an increase in consumption followed by a decline to more sustainable levels is shown in **Figure 3**. For the Brazilian beef cattle systems (**Figure 3A**), the warming resulting from CH_4 and N_2O grows rapidly in line with increasing production, but then stabilizes at a new, lower level responding to the new emissions rates. For



CO₂, however (again shown more clearly in the cultured meat example, **Figure 3B**), the reduction in emissions rate slows the rate of further warming, but this is added to the warming caused by historical emissions, which persists. The overall consequences of these dynamics depend on our climate objectives. The cattle production systems show greater peak warming within this time-frame (except for the comparison between the Swedish system and the highest footprint cultured meat system), but as a result of the persistence of the large-scale CO₂ emissions in the early periods of production for cultured meat, any long-term benefits of this production are further reduced compared to cattle systems.

DISCUSSION

As originally stated in Pierrehumbert and Eshel (2015), the temperature impacts of very large levels of beef consumption, under any of the systems explored here, are significant and likely incompatible with our climate goals. Despite the bold claims and superior carbon dioxide equivalent footprints, however, cultured meat is not necessarily a more sustainable alternative. In the most optimistic cultured meat production footprints, emissions are competitive with cattle systems for CO₂ while avoiding the other gases: this is unambiguously superior from a climate perspective. However, the long-term advantage over



cattle is not as dramatic as may be suggested by simple GWP₁₀₀ comparisons. For the most conservative cultured meat footprint used here, which still had a lower carbon dioxide equivalent footprint than any cattle system in the study, the long-term temperature impact of production is dramatically worse than any cattle system. Furthermore, as emissions from cultured meat are predominantly composed of CO₂, their warming legacy persists even if production declines or ceases (in the absence of active removal of this CO₂ from the atmosphere). Replacing cattle systems with cultured meat production before energy generation is sufficiently decarbonized and/or the more optimistic production footprints presented here are realized

(assuming they can be), could risk a long-term, negative climate impact.

In this study, beef was selected as the livestock meat to compare with cultured systems due to its especially high carbon dioxide equivalent footprint. It is striking how poorly these footprints correspond to long-term temperature impact, indicating the significant influence of the different atmospheric lifespan of each gas not adequately captured by the GWP₁₀₀ metric. The 100-years time-frame demonstrates the increasing divergence between GWP₁₀₀ footprints and warming impact, but the relative exaggeration of the impacts of sustained methane emissions is apparent well before this (any period beyond 100

years). GWP₁₀₀ CO₂ equivalents also fail to highlight some of the significant shorter-term differences between methane and CO₂, neither reflecting the immediate (within ~20 years) large-scale impacts of initially increasing methane emissions nor capturing the reversal of warming resulting from decreasing (or halting) emissions (which is also the case for nitrous oxide in the longer-term).

As on-going emissions of short-lived gases such as methane behave so differently to CO₂, even over immediate, policy-relevant timescales, we need to consider alternative appraisals for activities where emissions are largely composed of methane: here, cattle production, but other biogenic sources such as rice production, or fossil fuel sources such as natural gas leakage would need to consider similar dynamics. It is not sufficient to make broad climate claims based on GWP₁₀₀ carbon dioxide equivalent footprints alone. In order to investigate these issues, emissions associated with an activity must be provided in a disaggregated form allowing the assessment of each gas, yet these data are not generally available at present, and we urge researchers to provide them in the future (Lynch, 2019).

It has been argued that as the emissions from cultured meat are primarily from energy use, they may be significantly reduced in the future if energy generation is decoupled from emissions (Tuomisto and Teixeira de Mattos, 2011)—and given the long timeframe used here, large scale energy decarbonization will be essential well within this period to prevent very significant climate impacts irrespective of any emissions associated with food production. In the least optimistic cultured meat scenario here, however, the magnitude of energy required is such that sufficient decarbonized energy generation appears unlikely in the near to medium term. Assuming an energy footprint of approximately 360 MJ per kg cultured meat (high-end of the sensitivity analysis in Mattick et al., 2015b), the production of 25 kg per capita per annum for a global population of 10 billion would require around 90 EJ energy per annum, 22.9% of the 393 EJ total global energy consumption in 2015 (International Energy Agency, 2017); hence unrestrained consumption would result in a significant proportion of global energy supply going toward growing lab-grown meat in the absence of low-energy production systems.

Decarbonized energy generation would also eliminate a proportion of the CO₂ emissions from cattle systems, and so for this analysis we used footprints as presented under contemporary energy emissions assumptions. Additionally, the timing of a large-scale decarbonization of energy generation would have significant impacts on wider climate targets, including determining the extent of on-going methane emissions that are compatible with a given temperature ceiling. As cultured meat is an emerging technology, wider improvements in efficiency of production may reduce its emissions footprint in the future, in addition to the decarbonization of energy generation. This, too, could also apply to cattle systems though, employing mitigations or technologies or moving to more efficient systems (Rivera-Ferre et al., 2016).

Indeed, it could be argued that comparing extant cattle production with hypothesized cultured meat systems presents a

biased parallel. The speculative nature of all four cultured meat footprints tested here is borne of necessity, as to date there are no LCA of actual cultured meat production (at least in the public domain), despite manufacturer claims that a commercial launch is imminent (Stephens et al., 2018). Given the unknowns in this new form of production, we must be aware that impact assessments may change, and continue to take a systematic approach (Mattick et al., 2015a). There is a need for much greater transparency from cultured meat manufacturers, with relevant data available to interrogate any environmental claims.

In addition to the broad nature of each footprint, some specific elements of the cultured meat LCA remain unclear due to their speculative nature. In the default approaches from Tuomisto and Teixeira de Mattos (2011), for example, a proportion of emissions incurred in the production of cyanobacteria are not allocated to cultured meat, instead presumed assigned to food supplements. The potential for any co-products from cultured meat production will depend on the systems that might be realized. They should also be handled similarly to any co-products from cattle production, such as leather; but the treatment of livestock co-products in LCAs can be complex, and is not well-standardized at present (Mackenzie et al., 2017).

The nature of the functional unit—the unit of output to which emissions are assigned—also remains speculative in the case of cultured meat. If protein rather than “meat” was taken as our functional output the footprints would show even greater differences between studies, with Mattick et al. (2015b) assuming 7% protein by weight, compared to 19% in Tuomisto and Teixeira de Mattos (2011) and Tuomisto et al. (2014). Comparing impacts on a per protein (or wider nutritional) basis will be important as more detailed and/or real production footprints become available. Even with a generic meat functional unit, as used in this study, there may still be further differences not captured here. In Mattick et al. (2015b) the functional unit is 1 kg of cell biomass: any further processing or additional ingredients required to convert this biomass into an edible form or a conventional meat product analog would also need to be included for a full life cycle assessment comparing final meat products. Tuomisto and Teixeira de Mattos (2011) assumed their cultured meat system output is a “minced-beef type of product,” but may still differ from cattle beef in nutritional or sensory attributes, with further processing (and hence steps to consider in a life cycle assessment) potentially required if a complete beef analog is sought. The impacts of any processes to produce different meat products, such as steaks, may be even greater, and more complex tissue engineering of this type is not anticipated in the near-future (Stephens et al., 2018). Processing of livestock products can also be associated with considerable emissions (Poore and Nemecek, 2018), and so system boundaries must consistently include these in future work comparing environmental impacts of final products ready for consumption.

Spared land-use has been presented as another significant advantage of cultured meat production (Tuomisto and Teixeira de Mattos, 2011), and this land could entail a further climate benefit by being used for carbon sequestration. This may also be a factor in improved cattle production however, including simply more efficient use of current grasslands (Godde et al.,

2018). Land-use associated carbon fluxes are often poorly standardized in agricultural footprinting approaches (Adewale et al., 2018), and were excluded here. These land-use carbon fluxes may have significant impacts. For example, significant deforestation has resulted from pasture expansion, and including the CO₂ emissions resulting from this would greatly increase typical Brazilian beef footprints (Cederberg et al., 2011). At the same time, grassland soils contain significant quantities of organic carbon, and could potentially sequester even greater amounts under appropriate management (Conant et al., 2017). Further detail and standardization in land-use emissions and sequestrations is required in the future, including an appraisal of likely alternative land-uses following sparing of current agricultural land.

Although this study is concerned with the climate impacts of meat production, a wider context must also be considered. A number of other environmental impacts are associated with beef production, such as water pollution and acidification (Poore and Nemecek, 2018), and cultured meat may provide benefits in these wider impacts; but again, caution should be advised until reliable LCAs are available for actual production systems. Conversely, we must also consider the wider benefits that might be provided from meat production systems, including associated co-products, the provision of ecosystem services, their socioeconomic role in rural communities, and their landscape or cultural value (Rodríguez-Ortega et al., 2014). It has been argued that cultured meat production is a potentially transformative technology, and so social assessments must also be made to anticipate the disruption (positive or negative) that may be caused (Mattick et al., 2015c), alongside environmental impacts such as climate change. As a concept, it has been suggested that cultured meat overcomes some of the ethical problems of livestock production (Schaefer and Savulescu, 2014), but has also been criticized as a problematically techno-centric, profit-motivated approach (Metcalf, 2013). Hocquette (2016) questions the broad need for cultured meat, suggesting that there are already alternative solutions that we could employ to overcome problems with our food system. Finally, any climatic or wider benefits that may be possible through replacing livestock systems with cultured meat depends on how people perceive and ultimately consume cultured meat products (i.e., as a direct replacement or in addition to conventional livestock products). Early research suggests consumer reluctance to replace conventional with cultured meat, with public willingness to eat cultured meat

dependent on a number of personal concerns and anticipated benefits (Bryant and Barnett, 2018).

CONCLUSIONS

The scale of cattle production required for the very high levels of beef consumption modeled here would result in significant global warming, but it is not yet clear whether cultured meat production would provide a more climatically sustainable alternative. The climate impacts of cultured meat production will depend on what level of decarbonized energy generation can be achieved, and the specific environmental footprints of production. There is a need for detailed and transparent LCA of real cultured meat production systems. Based on currently available data, cultured production does not necessarily give license for unrestrained meat consumption.

AUTHOR CONTRIBUTIONS

JL and RP designed the study and carried out the modeling. The manuscript was written by both authors following an initial draft by JL.

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Thanks to Carolyn Mattick and Hanna Tuomisto for providing further details on their cultured meat life cycle assessments and providing feedback on the system descriptions in this paper, and to Alexandra Sexton for helpful feedback and discussion. We would also like to thank the two reviewers for their constructive comments.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fsufs.2019.00005/full#supplementary-material>

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Conflict of Interest Statement: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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From: [Dave Pyburn](#)
To: ["John Johnson \(johnjohnson@pork.org\)"](#)
Cc: [Steve Larsen](#)
Subject: FW: Introductions
Date: Friday, July 13, 2018 3:18:00 PM

Kaysen also not available. We will not be able to send someone.

Steve, thank for heads up on potential free registration.

Dr. Dave Pyburn
Vice President of Science and Technology
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Phone: 515-223-2634
Cell (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

From: Brett Kaysen
Sent: Friday, July 13, 2018 2:11 PM
To: Dave Pyburn <dpyburn@pork.org>
Subject: Re: Introductions

Dave,

Thanks for the invite I would be honored to attend however I already have a booked schedule on these dates. My apologies.

BK

Sent from my iPhone

On Jul 13, 2018, at 1:55 PM, Dave Pyburn <dpyburn@pork.org> wrote:

Brett:

See below conference on lab meats. This is last minute so no push to do this. I am coming up empty with potential attendees from SciTech. Are you interested in attending and taking good notes?

Dr. Dave Pyburn
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On Jul 9, 2018, at 9:51 AM, Dave Pyburn <dpyburn@pork.org> wrote:

<https://www.new-harvest.org/about>

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From: John Johnson
Sent: Monday, July 9, 2018 9:29 AM
To: Steve Larsen <slarsen@pork.org>
Cc: Dave Pyburn <dpyburn@pork.org>; Bill Even <BEven@pork.org>
Subject: Re: Introductions

What is New Harvest?

John A. Johnson

On Jul 9, 2018, at 8:30 AM, Steve Larsen <slarsen@pork.org> wrote:

FYI...

Please see below. Do we have any interested in attending the New Harvest conference?

Thanks,

Steve Larsen, PhD
Assistant Vice President, Science and

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From: Deidrea Mabry (AMSA)
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Sent: Friday, July 6, 2018 3:55 PM
To: Thomas Powell
<tpowell@meatscience.org>; Eric Berg
<Eric.p.berg@ndsu.edu>; Rhonda Miller
<rmiller@tamu.edu>; Steve Larsen
<slarsen@pork.org>
Subject: FW: Introductions

See below...Jess is the student that had an abstract at RMC this year and spoke during the Debate session New Harvest has funded her research in this area.

Benjy Mikel is on the program as well at this event.

Anyone interested in attending?

Deidrea

Deidrea Mabry, MS
Associate Executive Director
773-913-2021

From: Isha Datar <isha@new-harvest.org>
Sent: Tuesday, July 3, 2018 9:26 PM
To: Dale Woerner
<dale.woerner@colostate.edu>
Cc: Jess Krieger <jkrieger@kent.edu>; Dr. Tommy L. Wheeler
<tommy.wheeler@ars.usda.gov>; Deidrea Mabry (AMSA) <dmabry@meatscience.org>
Subject: Re: Introductions

Thanks so much for the connection, Jess!

Hello Dale, Tommy and Deidrea!

It's great to be connected. I have heard such great things about RMC and I'm very glad to see this topic being discussed with rigor. Would the best next step be for us to be on a call together?

In the meanwhile, New Harvest is hosting our annual conference July 20 & 21 at the MIT Media Lab in Boston. [Link to the full event here](#). I would be honored to extend complimentary passes to all three of you (and anyone else you would like to invite). It would be an excellent way to get a sense of New Harvest's work and the community we have been fostering. Many more voices from the meat industry are needed in this emerging space.

Let me know how you would like to proceed. If you're interested in tickets, just give me the signal and we can get you registered.

Thanks and have a happy Fourth!

Isha Datar

Executive Director, New Harvest
Shuttleworth Foundation Fellow
MIT Media Lab Director's Fellow
154 Grand St. | New York, NY 10013 | +1 347-259-3055
isha@new-harvest.org | www.new-harvest.org

[We've accomplished so much in 2017](#), thanks to our donors!

New Harvest is 100% powered by philanthropy! [You can help](#).

On Tue, Jul 3, 2018 at 1:33 AM, Woerner, Dale
<Dale.Woerner@colostate.edu> wrote:

Thank you Jess! It was a pleasure to have you present your research at RMC this year, and it was great having you there. I have copied Dr. Tommy Wheeler and Deidrea Mabry on

this message. Together, they will be putting together the technical program for RMC next year. I agree that this topic should be included at RMC for years to come.

Best wishes! Have a wonderful 4th of July!

Dale R. Woerner, Ph.D.

Associate Professor
Center for Meat Safety & Quality
Department of Animal Sciences
Colorado State University
Fort Collins, CO 80523-1171
Dale.Woerner@ColoState.edu
O: 1.970.491.7615

From: Jess Krieger <jkrieger@kent.edu>
Sent: Monday, July 2, 2018 10:17 AM
To: Woerner,Dale
<Dale.Woerner@ColoState.EDU>; Isha Datar
<isha@new-harvest.org>
Subject: Introductions

Hello Dale,

It was great meeting you at the RMC. I agree that it would be helpful for all sides of the cultured meat debate to have regular communication, especially since cultured meat technology is part of the meat industry.

I'd like to introduce you to Isha Datar, the executive director of New Harvest. New Harvest is a nonprofit who's funded my cultured meat research and the research of other academics like me. I think you two will have a great discussion.

I'll let you take it from here!

Best,

Jess

New Harvest Research Fellow

*Biomedical Sciences PhD candidate
Innate Immunity and Tissue Engineering Laboratory,
Kent State University*
[Min-Ho Kim Lab Website](#) / [LinkedIn](#) / [New Harvest](#)

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Agenda, NPIC 2016

Sunday, July 10

- 6:30 pm Enjoy a great barbeque with the meat prepared by Lynch Livestock on their BIG GRILL that you've seen at World Pork Expo. Join old friends and make new ones. Take this opportunity to visit and compare notes with the "who's who" in the pork industry.

Monday, July 11

- 6:30am Buffet Breakfast
- 8:00am **Cultured Meat: What is it? What role will it play in commercial protein production?**
Mark Post MD, PhD, Maastricht University, The Netherlands
Dr. Post will be traveling from The Netherlands to join us. Is this technology a threat to your business? You won't want to miss this keynote presentation. You will likely find his comments to be both encouraging and provoking at the same time.
- A Global View from a Global Player**
Dhamu Thamodaran, Executive VP, Chief Risk Management Officer, Smithfield Foods
- Our Social Media War Room**
Eric Graves, President North American Operations, Elanco Animal Health
The technology, how we process and use what we gather, what's trending?
- Noon Group Lunch
- 1:15pm Breakout sessions begin. These session will rotate three times:

Location	1:15-2:15	2:30-3:30	3:45-4:45
Ballroom A-B G-H	 AgStar Financial Services, ACA A Look to the Future of the Pork Industry, Mark Greenwood, Sr. Vice President, AgStar	 Farm Credit Services of America AGRICULTURE WORKS HERE... Trent Loos, "If Not Now, Then When? If Not You, Then Who?"	
Ballroom C-D E-F	 pork checkoff	 Elanco Implementing Innovation in a Changing Environment, Gary Bosch, Sr. Director Swine Business Unit, Elanco	 Fast Genetics Sex Sorted Sperm: Past, Present, and Future
Guava & Tamarind <i>Offered Once</i>	 GENESUS Global Swine Markets Jim Long, CEO, Genesis Pork Quality Katie Sinclair, Genesis	 PURINA Would You Allow Your Children to Drink the Water Your Baby Pigs Drink? Mary Fox, Proxy-Clean	
Aralia <i>Offered Three Times</i>	Audit Process Panel Collette Kaster, Professional Animal Auditor Certification Organization, will lead a panel discussion with other top experts from the industry joining her.		
Tamboti & Aloeswood <i>Offered Three Times</i>	Nutrition & Feed Management for Today's Pigs Brent Frederick, Christensen Farms		
Crown Palm <i>Offered Three Times</i>	The Unintended Consequences of Trusts Gary Koch, Matt Berger & Kaitlin Pals, Gislason & Hunter		
Mangrove <i>Offered Three Times</i>	Veterinary Issues Facing the Industry Today...and Tomorrow		
Marula <i>Offered Three Times</i>	How to Implement a Culture of Safety to Improve Your Bottom Line Barrett Eller, New Fashion Pork		
Portia & Wisteria <i>Offered Three Times</i>	Risk Management 101 Pat Von Tersch, Professional Ag Marketing		

- 4:45pm Conference ends for the day. Enjoy your evening.

Tuesday, July 12

6:30am Buffet breakfast available

6:30am **Early Bird Session:** For those who want to attend, this is truly a bull session. Some past attendees have rated it the most beneficial session of the conference. It's a chance for a smaller group of producers to get together and discuss anything on your minds. This session will end in time for participants to have breakfast before the next general session.

8:00am **Raised without Antibiotics and Animal Welfare** Dr. Joe Connor, President, Carthage Veterinary Services. Dr. Connor will lead a panel discussion regarding the practical production implications of antibiotic-free production and the animal welfare issues associated with.
Panelists - Ben Woolley - Sunterra Farms, Dr. Jim Magolski - Coleman Natural Foods & Dr. Tim Loula - Swine Vet Center

Handicapping the National Election Race David Wasserman, The Cook Report Sponsored by NPPC

Seaboard Triumph Foods New Plant in Sioux City, IA Gary Louis, Vice President, Seaboard Foods.

11:30am Conference ends for the day. Enjoy golf, boating, sightseeing in the Dells or relaxing with your family in the water park.

Wednesday, July 13

6:30am Buffet Breakfast available

7:00am Early Bird Session

8:30am **Focusing on the Markets** led by our industry economic experts, Dr. Steve Meyer, EMI Analytics, Inc and Joe Kerns, Kerns & Associates.

11:00am Conference adjourns See you next year July 9 – 12, 2017

From: [Brett Kaysen](#)
To: [Charlotte Rommereim](#)
Subject: RE: Growing meat in the lab isn't such a good idea. Yet / Perdue Wants Ag to Push Out the Truth About Food
Date: Friday, March 1, 2019 8:06:00 AM

Char,

Let's discuss this next week in FL!

Safe Travels!

BK

From: Charlotte Rommereim (b) (6) >
Sent: Thursday, February 28, 2019 11:52 AM
To: Brett Kaysen <BKaysen@pork.org>
Subject: Re: Growing meat in the lab isn't such a good idea. Yet / Perdue Wants Ag to Push Out the Truth About Food

Thanks for the article Brett. I have read through the research from the UK that is referenced in the article. Well, I should say I skimmed it. It was later in the evening so I didn't have my "reading research brain" at the time.

Most of the articles I have read regarding sustainability of animal ag feature beef's story of non-arable land use and methane's impact for 12 years as opposed to CO2. How do you translate that sustainability message for a monogastric animal that eats the corn and soybeans grown on arable land the environmentalists think should be growing vegetables? I would like your thoughts and guidance. Thanks. I'm presenting to California dietitians in a few weeks and want to present info on this.

Charlotte

On Wed, Feb 27, 2019, 4:32 PM Brett Kaysen <BKaysen@pork.org> wrote:

Sent from my iPhone

Begin forwarded message:

From: "theporkwire "
<theporkwire@iowatelecom.net<mailto:theporkwire@iowatelecom.net>>
Date: February 27, 2019 at 2:25:09 PM MST
To: "theporkwire "
<theporkwire@iowatelecom.net<mailto:theporkwire@iowatelecom.net>>
Subject: Growing meat in the lab isn't such a good idea. Yet / Perdue Wants Ag to Push Out the Truth About Food

Growing meat in the lab isn't such a good idea. Yet

By Daniel T Cross<<https://www.sustainability-times.com/author/daniel-t-cross/>>

People love meat. The trouble is that meat production, especially red meat production, is a major driver of climate change and environmental destruction. Red meat requires 28 times more land to produce than pork or chicken as well as 11 times more water. Beef production also leads to five times more greenhouse gas emissions, particularly in the form of methane. This matters because all in all greenhouse gas emissions from agriculture amount to a quarter of climate change-inducing emissions.

So teams of researchers have come up with an answer: growing meat in the laboratory<<https://www.sustainability-times.com/green-consumerism/your-juicy-steak-could-soon-be-grown-in-the-lab/>>. By doing so, they argue, we can drastically reduce the environmental impacts of those juicy stakes on our plates.

Turns out, though, that this might not be the case, though, according to a new study<<https://www.frontiersin.org/articles/10.3389/fsufs.2019.00005/full>> by experts at the Oxford Martin School of Oxford University in the United Kingdom. The researchers examined the climate impacts of several production methods for lab-grown and farmed beef, based on the differing levels of greenhouse gases produced and how these gases would impact the climate long-term. Their finding: replacing cattle with cultured meat may not translate into a simple equation whereby a high-impact method is replaced with a low-impact one.

“Over the long term, cultured meat production methods requiring large energy inputs could increase global warming more than some types of cattle farming if energy systems remain dependent on fossil fuels,” the scientists explain<<http://www.ox.ac.uk/news/2019-02-19-lab-grown-meat-really-better-environment>>. “Currently proposed types of lab-grown meat cannot provide a cure-all for the detrimental climate impacts of meat production without a large-scale transition to a decarbonised energy system.”

In other words, in order for “labriculture” methods of producing beef to become viable forms of low-impact substitutes for farmed beef, they will have to become more efficient.

“We conclude that cultured meat is not prima facie climatically superior to cattle; its relative impact instead depends on the availability of decarbonized energy generation and the specific production systems that are realized,” the researchers explain.

“There has been a great deal of public interest in cultured meat recently, and many articles highlight the potential for substituting cattle beef with cultured meat to provide an important climate benefit,” lead author Dr. John Lynch elucidates. “We show that it is not yet clear whether this is the case, partly because of uncertainties about how cultured meat would be produced at scale. An important issue in comparing farmed and cultured beef is that the different warming impacts of greenhouse gases are also not well accounted for in the standard measure used in carbon footprints.”

According to estimates produced by the researchers, tallying up carbon-dioxide equivalent footprints can be misleading because not all greenhouse gases generate the same amount of warming or have the same lifespan in the atmosphere. “Cattle are very emissions-intensive because they produce a large amount of methane from fermentation in their gut,” notes co-author Raymond Pierrehumbert, a professor of physics at Oxford.

“Methane is an important greenhouse gas, but the way in which we generally describe methane emissions as ‘carbon dioxide equivalent’ amounts can be misleading because the two gases are very different,” Pierrehumbert explains. “Per tonne emitted, methane has a much larger warming impact than carbon dioxide; however, it only remains in the atmosphere for about 12 years whereas carbon dioxide persists and accumulates for millennia. This means methane’s impact on long-term warming is not cumulative and is impacted greatly if emissions increase or decrease over time.”

However, that does not mean that the idea of growing meat in the lab so as to reduce methane emissions should be dead in the water. There are 1.5 billion or so heads of cattle in the world and raising all those animals requires vast swathes of grazing land. Much of that land has been reclaimed from forests. By growing beef in the lab, we could free up large portions of that vast land area and reforest them. That way we could boost biodiversity and also use these new forests as natural carbon sinks.

A key issue will be to produce lab-grown meat at low environmental costs, including sustainable energy sources. “The climate impacts of cultured meat production will depend on what level of sustainable energy generation can be achieved, as well as the efficiency of future culture processes,” Lynch stresses.

Perdue Wants Ag to Push Out the Truth About Food

By

Andy Eubank<<https://www.hoosieragtoday.com/author/andy-eubank/>>

Should Americans fear their food? The head of USDA says that’s a big NO! Agriculture Secretary Sonny Perdue is calling on agriculture to fight back against the “Fear Your Food” movement. Perdue told the 95th Ag Outlook Forum, the “Fear Your Food” movement could harm efforts to feed the world’s soaring population and shouldn’t go unanswered.

“This growing fear has the potential to sideline, deter, critical technologies that we already use, and derail technologies in the pipeline, that we already know how to achieve.”

Perdue urged the ag community to “connect with the consumer” and “fight” those spreading fear of food.

“We need to be transparent, because we have nothing to hide. We must get better at telling our own stories, rather than letting others fill in the void. Consumers need the truth, don’t fear your food.”

Perdue argues, science has proven through exhaustive testing, hundreds of studies and food safety decisions in 28-countries, crop protection tools are safe.

“For example, our own Environmental Protection Agency follows a rigorous, science-based standard for regulating pesticides, used in food production. USDA’s own Agricultural Marketing Service runs a pesticide data program. Here are the facts. In the most recent survey in 2017, more than 99-percent of sample items, had pesticide residues that did not exceed any of the EPA standards and balances and tolerances, and more than half had no detectable residue at all.”

Perdue says bioengineered crops have even reduced the need for pesticides...and even the EU deems them safe for import, even though they won’t let their own farmers grow them.

[fond] <<http://choice-genetics.com/enfr/>>

For your Choice Needs:

Contact: Daryl Kunkel

20560 254th St. Delhi, Iowa 52223

dkunkel@iowatelecom.net<<mailto:dkunkel@iowatelecom.net>>

Office: 563-922-2910 / Mobile: 319-240-2894

[[cid:image004.jpg@01D4CEB0.9A60AD20](#)]

Jason Mullenhoff

Ryan Mead

Brent Wietfeld

o/ 402-487-2860<<tel:402-487-2860>>

o/ 402-487-2860<<tel:402-487-2860>>

o/ 402-487-2863<<tel:402-487-2863>>

m/ (b) (6)

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jason@pigexpress.com<<mailto:jason@pigexpress.com>>

ryan@pigexpress.com<<mailto:jason@pigexpress.com>>

brent@pigexpress.com<<mailto:brent@pigexpress.com>>

www.pigexpressinc.com<<http://www.pigexpressinc.com>>

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From: [Sharlotte Peterson](#)
To: [John Johnson](#); [Bill Winkelman](#)
Subject: RE: Good Food Institute
Date: Wednesday, January 31, 2018 2:48:00 PM

Thanks John, I have reached out to them.

From: John Johnson
Sent: Wednesday, January 31, 2018 10:57 AM
To: Bill Winkelman <bwinkelman@pork.org>; Sharlotte Peterson <SPeterson@pork.org>
Subject: Good Food Institute

Clean Meat Speaker
<http://www.gfi.org/our-team>

John A. Johnson
Chief Operating Officer
National Pork Board
1776 NW 114th Street
Clive, IA 50325

Office Phone: 515-223-2765
Cell Phone: (b) (6)

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From: [John Johnson](#)
To: [Kris Huson](#)
Subject: RE: Gene editing communications
Date: Thursday, June 21, 2018 5:01:00 PM
Attachments: [image001.png](#)

OK, works for me. I will call you then. And, yes, I saw the proposed reorg of govt. Let's hope Congress goes along with at least this part.

From: Kris Huson <kris.huson@recombinetics.com>
Sent: Thursday, June 21, 2018 3:59 PM
To: John Johnson <johnjohnson@pork.org>
Subject: RE: Gene editing communications

I have a meeting from 9-10. Would 10 work?

Also, have you seen **this**: <https://www.statnews.com/2018/06/21/fda-new-name-mission-proposal>.

WASHINGTON — The Trump administration has proposed a fundamental change to the mission of the Food and Drug Administration, one that would transfer most of the responsibility for regulating food safety to the Department of Agriculture and rename the FDA the “Federal Drug Administration.”

The proposal is part of a [wide-reaching plan](#) that was released Thursday by the White House and that includes other broader ideas to reform the Department of Health and Human Services. HHS would be renamed the “Department of Health and Public Welfare” and absorb some food assistance programs currently run by the USDA.

The idea of changing a key mission of the FDA comes amid a turf war between the FDA and the USDA. The two agencies have recently battled over who gets to regulate lab-grown meat, [Politico reported](#) last week. And in May, FDA Commissioner Scott Gottlieb spoke about the importance of his agency [regulating genetically engineered animals](#).

ADVERTISEMENT

“Food safety is at the core of the agency’s mission to protect and promote public health for our nation’s consumers,” Gottlieb said in a statement last week on the topic of lab-grown meat. “We take seriously our commitment to the consumers and industry who look to the FDA for important guidance when it comes to our nation’s food supply, including the pathway for bringing forward safe, emerging food innovations.”

The FDA declined to comment on the proposal.

From: John Johnson [<mailto:johnjohnson@pork.org>]
Sent: Thursday, June 21, 2018 3:55 PM

To: Kris Huson <kris.huson@recombinetics.com>

Subject: RE: Gene editing communications

Friday morning at 9:30?

From: Kris Huson <kris.huson@recombinetics.com>

Sent: Thursday, June 21, 2018 3:36 PM

To: John Johnson <johnjohnson@pork.org>

Subject: RE: Gene editing communications

Hello John!

Thanks for reaching out. This sounds great. We definitely agree, that it will take a village. Let's chat! I am available now, this afternoon if that works, otherwise tomorrow after 9 AM CST.

Kindly,

Kristine Huson

Communications Manager

Office: 612-727-2000

Mobile: (b) (6)

recombinetics.com



From: John Johnson [<mailto:johnjohnson@pork.org>]

Sent: Thursday, June 21, 2018 1:15 PM

To: Kris Huson <kris.huson@recombinetics.com>

Subject: FW: Gene editing communications

Kris,

I was wondering if we could chat some time, either by phone or in person. We are collaborating with Corteva (old DuPont/Pioneer), Center for Food Integrity, United Soybean Board, Genus and others, trying to raise the profile of and engage in constructive dialogue about gene editing with the hope that we can build consumer trust and avoid the GMO experience. I would love to hear Recombinetics views on the subject.

Best regards,

John A. Johnson
Chief Operating Officer
National Pork Board
[1776 NW 114th Street](#)
[Clive, IA 50325](#)

Office Phone: [515-223-2765](#)

Cell Phone: (b) (6)

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From: [Dave Pyburn](#)
To: [Steve Larsen](#)
Subject: Re: Cultured Meat Symposium
Date: Wednesday, October 10, 2018 4:23:26 PM

I am registered and planning to attend

Sent from my Verizon, Samsung Galaxy smartphone

----- Original message -----

From: Steve Larsen <slarsen@pork.org>
Date: 10/10/18 12:55 PM (GMT-06:00)
To: Dave Pyburn <dpyburn@pork.org>
Subject: Cultured Meat Symposium

Dave,

Do we have anyone from the industry going to the cultured meat symposium?

Cultured Meat Symposium

San Francisco, CA

<https://cms18.com/event-agenda/>

It looks like they are starting to talk about flavor and meat science issues/concerns.

Is this something Laura should attend to have a meat scientist attend?

Thanks,

Steve Larsen, PhD

Assistant Vice President, Science and Technology

National Pork Board

1776 NW 114th Street

Des Moines, IA 50325

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Cell Phone: (b) (6)

Fax: (515)223-2646

slarsen@pork.org

www.pork.org

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From: [Dave Pyburn](#)
To: [Christopher J Detzel](#)
Subject: RE: Clean Meat?
Date: Sunday, February 17, 2019 10:14:00 AM

Chris:

Thanks for forwarding this article and it was good to meet and talk with you at the SF conference as well. Very telling that an anti-meat person wrote this and stood up for the industry. If you ever need information on the US pork industry please do contact me.

Dr. Dave Pyburn
Vice President of Science and Technology
National Pork Board
1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634
Cell: (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

From: Christopher J Detzel <Christopher.Detzel@proliantinc.com>
Sent: Saturday, February 16, 2019 3:54 PM
To: Dave Pyburn <dpyburn@pork.org>
Subject: Clean Meat?

Hi David,

It was great to meet you in San Francisco last week. That was definitely an interesting conference. The whole industry has a lot of potential, but there are some monster engineering problems to solve first.

Below is a link to the article I was telling you about where the author points out that the meat industry has less of an impact on the climate than what is portrayed by pop culture!
<https://www.project-syndicate.org/commentary/meat-production-overstated-effect-on-climate-change-by-bjorn-lomborg-2018-11>

All the way to San Francisco to meet a neighbor, crazy small world!
Cheers,
Chris

Christopher Detzel, Ph.D.
Director of Research & Development
Entera Health, Inc. | Proliant Biologicals
[2575 SE Oak Tree Court, Ankeny, IA 50021](#)
Phone: [515.289.5158](tel:515.289.5158) | **Cell:** (b) (6)

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From: [Jarrod Sutton](#)
To: [Chris Hostetler](#); [Steve Larsen](#)
Subject: RE: Complimentary Ticket to the Food & Drink Research, Innovation and New Product Development Summit
Date: Thursday, September 1, 2016 9:46:09 PM

YES!

Jarrod Sutton
National Pork Board
(515) 223-2766

From: Chris Hostetler
Sent: Thursday, September 1, 2016 2:50 PM
To: Steve Larsen <slarsen@pork.org>; Jarrod Sutton <jsutton@pork.org>
Subject: FW: Complimentary Ticket to the Food & Drink Research, Innovation and New Product Development Summit

Best regards,

Chris Hostetler, PhD, PAS

Director of Animal Science
National Pork Board
O: (515)223-2606
M: (b) (6)

From: Food & Drink NPD and Innovation Summit [<mailto:newsletter@foodbevinnovation.com>]
Sent: Wednesday, August 17, 2016 4:10 AM
To: Chris Hostetler <chostetler@pork.org>
Subject: Complimentary Ticket to the Food & Drink Research, Innovation and New Product Development Summit

Hi there,

I would like to offer you complimentary delegate passes to the [2016 Food and Drink Research and Innovation & NPD Summit](#) which is a conference and exhibition focused on researching, developing and launching new products and brands in the food and beverage industry. The event is being held on November 30th 2016 in the National Motorcycle Museum, Birmingham.

The purpose of the inaugural Food and Drink Research and Innovation and NPD Summit has a

singular focus — Bring together 500+ senior executives and management from the leading food and beverage manufactures, retailers and foodservice companies that are responsible for R&D, Innovation, NPD, quality, health and Nutrition, Ingredients, brand management and marketing, technical, cost reduction, reformulation, commercialisation, consumer insights etc, as well as leading suppliers of technologies and services.

By gathering these key stakeholders in one room we hope to facilitate knowledge, sharing and collaboration in order to make the improve the taste, quality, health, sustainability, cost performance, functionality, nutrition etc of the food we eat we eat as well as sharing info and experiences on developing and launching successful products and brands

The 50+ speaker line up is drawn from senior management from leading food and beverage companies that have responsibility for areas such as NPD,R&D, Innovation, Brand Management & marketing, lab management, regulatory, nutrition, compliance, quality, nutrition, Ingredients, commercialisation, consumer insights etc.

There is also an exhibition at the event where 50+ exhibitors will be on hand to offer their expertise and demonstrate their cutting edge technology, equipment and services.

You simply need to [register online](#) and there will be a delegate badge waiting for you. Feel free to pass on the invitation to colleagues, clients etc.

To Exhibit, Sponsor or speak at the event please email John Bent at <mailto:info@foodbevinnovation.com> or on [+353 16120880](tel:+35316120880)

Note: This event is being co-located with the [Food Quality and Safety Summit](#) which is an event focused on food safety and quality in the food and beverage industry. Delegates are freely able to move between Summits and visit the different conferences and exhibition areas.You simply register for the event you wish to attend and then you can visit the other conference and expo.

Key Topics Include:

Understand the latest food trends and opportunities, Taste/Health Balance, Consumer engagement in NPD, Avoiding regulatory pitfalls, Clean label, emerging ingredients, latest health trends, shelf life extension , Production of alternative food substitutes(in vitro meat, algae, insects etc), achieving health claims approval, Nutritional labelling, sustainable ingredient sourcing, nutraceuticals, Functional ingredients, Store Shelf Innovation, clinical trial implementation, data analysis, recipe formulation, salt, sugar and fat reduction, natural ingredients, free from, taste enhancement, consumer trends, cost saving reformation, regulations, calorie reduction, future foods, quality assurance, Innovative R&D processes, from concept to launch, research methodology, Flavour Enhancement, retailer trends,

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Regards,

John Bent

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From: [Cindy Cunningham](#)
To: [Angie Gassett \(agassett@webershandwick.com\)](#); [Steve Larsen](#)
Subject: FW: Cell Cultured meat
Date: Thursday, September 6, 2018 5:36:00 PM

Thanks for a great meeting today!

Cindy Cunningham
Assistant Vice President of Communications
National Pork Board
ccunningham@pork.org
515-223-2600 office
(b) (6) cell

From: Eric Mittenthal <emittenthal@meatinstitute.org>
Sent: Thursday, September 6, 2018 2:57 PM
To: Cindy Cunningham <ccunningham@pork.org>; Janet Riley <jriley@meatinstitute.org>
Subject: RE: Cell Cultured meat

Cindy-Our members are pretty aligned on position and communications about cell based products. I can share a few resources that will hopefully be helpful. Ours are probably a bit more focused on regulatory questions than you might be but some of the language there might be helpful. Let me know if you have any questions...

First is the Media MythCrusher we developed about the products and the many misconceptions in the media: <https://www.meatinstitute.org/index.php?ht=a/GetDocumentAction/i/145859>

Here's also the blog post we wrote following release of the Memphis Meats letter:
<http://blog.meatinstitute.org/2018/08/fostering-a-partnership-toward-appropriate-regulation-of-cell-based-meat/>

Here's what we sent Tamar Haspel when she asked us about it a few weeks ago. Our key points aim to make clear that meat is a valuable part of the diet, cell-based products have to reach a pretty high bar to compete on taste/texture/nutrition/affordability, "clean meat" is an inappropriate term and consumer choices be made on accurate information. She had asked a question about environmental impact so we addressed that in the last paragraph...

"There is a very clear role for meat in our diets as a delicious, nutrient dense food that delivers many important nutrients including protein, iron, Vitamin B12 and more. More than 95 percent of Americans enjoy meat, with taste and affordability as top drivers. To date, only a select few have tasted new cell based meat products, so it is impossible to say whether they will have a role in our diets, how consumers will respond to their taste and whether they will be affordable, but we do know cultured products have some tough competition when it comes to taste, texture, nutrition and affordability. Kudos, however, to these innovative scientists for their determination. Imitation is the highest form of flattery.

At the moment the most important question from our perspective is how these new products will be regulated. Cell based meat producers say their product is meat, so we feel strongly that it should be regulated as meat by the USDA Food Safety and Inspection Service. We recently sent a [letter](#) to President Trump with that request and also further detailed the role of inspectors in a [blog](#) in response to some of the comments made by those who disagree.

Regarding what the product should be called, we refer to it as cell-based meat because scientists within the industry have indicated it is an accurate term for the technology. One term that is neither accurate nor appropriate, however, is “clean meat.”

On the “planet friendly” question... NAMI members believe in consumer choice. Consumers take many factors into account in every purchasing decision they make. Taste, price and convenience have long been the strongest drivers of consumer choice, although for some, environmental impact plays a role in their purchasing decisions. There are more than 21,000 different meat and poultry products available at retail so consumers have many choices available to fit their values. It is important that consumer choices be made based on accurate information and to date much of the discourse on meat’s environmental impact, particularly in the U.S., has been inaccurate or misleading. “

From: Cindy Cunningham <ccunningham@pork.org>

Sent: Thursday, September 6, 2018 10:15 AM

To: Janet Riley <jriley@meatinstitute.org>; Eric Mittenthal <emittenthal@meatinstitute.org>

Subject: Cell Cultured meat

Good morning—

In a meeting right now working on some updated talking points on Cell Cultured Meat. Since you have members on both sides of this discussion, we are just wondering how you handle this.

Thanks

Cindy

Cindy Cunningham

Assistant Vice President of Communications

National Pork Board

ccunningham@pork.org

515-223-2600 office

(b) (6) cell

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Register Today for these NAMI Events:

Pathogen Control and Regulatory Compliance in Beef Processing Conference, Chicago, IL, Sept. 5-6

Animal Care and Handling Conference, Kansas City, MO, Oct. 18-19

Advanced Listeria monocytogenes Intervention and Control Workshop, Oct. 23-24

www.meatinstitute.org

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Lutton, Sara - AMS

Subject: Canceled: USDA FDA Joint Animal Cell Cultured Meat Technology Public Meeting
Location: Coference Room A NPB Office
Start: Tue 10/23/2018 8:30 AM
End: Wed 10/24/2018 4:30 PM
Show Time As: Free
Recurrence: (none)
Meeting Status: Accepted
Organizer: Laura Bachmeier
Required Attendees: Chris Hostetler; John Johnson; Liz Wagstrom; Dallas Hockman
Optional Attendees: Cindy Cunningham; Rhea Schirm; Dave Pyburn; Steve Larsen

On Oct. 23-24, 2018 the USDA and FDA will be holding a joint public meeting regarding cell-cultured meat technology.

There is an option to join the discussion via webinar.

Dates and times below-

Oct 23 8:30 am to 4:30 pm Eastern Time

Oct 24 8:30 am to 4:30 pm Eastern Time

If you are able to join, please click on the link below where you can read further information, as well as register for the event.

<https://www.usda.gov/media/press-releases/2018/09/10/usda-and-fda-announce-joint-public-meeting-use-animal-cell-culture>

Dave, Steve, and I will be traveling for business on both of these days so will be unable to participate.

I have held Conference Room A at NPB for those of you able to join. We would appreciate participation to report back on discussion throughout the event and public comments provided.

Thank you, please let me know if you have any questions.

Regards,

Laura Bachmeier, M.S.

Director of Pork Quality and Safety

National Pork Board

1776 NW 114th Street Clive, IA 50325

Office: (515)-223-2764

Cell: (b) (6)

Email: LBachmeier@pork.org

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From: [Randy Krotz](#)
To: [Brad Greenway](#); [brooksid@adams.net](#); [Chris Galen](#); [GeickStevenR@JohnDeere.com](#); [qvlee@srvinet.com](#); [jhouston@beef.org](#); [Jim & Anne Meis](#); [Jeanette Merritt](#); (b) (6); [michael.parrish@monsanto.com](#); [monty.henderson@georgiesinc.com](#); (b) (6); (b) (6); (b) (6); [studercharlesa@johndeere.com](#); [svanderwal@fb.org](#); (b) (6); [todd.frazier@pioneer.com](#); [GeickStevenR@JohnDeere.com](#); [amanda.rinehart@pioneer.com](#); [novak@ncga.com](#); [Bill Even](#); [jbecherer@unitedsoybean.org](#); [John Starkey](#); "Kendal Frazier"; [Neil Dierks](#); [Anne Alonzo](#); [Zippy Duval](#); [John Johnson](#); [Julie Anna Potts](#); "Lisa O'Brien" ([lobrien@unitedsoybean.org](#)); [Luther Markwart](#); [JMcCreedy@amalsugar.com](#); [Julie Anna Potts](#)
Cc: [macet@fb.org](#); [Dallas Hockman](#); [qvenable@uspoultry.org](#); [Kevin Waetke](#); [Ladonna lee](#); [Season Solorio](#); [sharyl.sauer@pioneer.com](#); [Mary Hagan](#); [LEAKE, BRIAN D. \[AG/1000\]](#); [Scott Herndon](#); [Lauren Taylor](#) ([LTaylor@indianasoybean.com](#)); [arichardson](#) ([arichardson@aei.org](#)); [bishop_grady_l@elanco.com](#); [parr_dekker_colleen@elanco.com](#); [lee.quarles@monsanto.com](#); [Doyle Karr](#); [Lood, Christina](#); [Sizelove, Jeff](#); [Elliott, Beth](#); [Pinkerton, Wendy](#); [Lowe, Jonathan](#); [White, Elinore Y.](#); "weinzier@ilcom.org"; [cfloss@iowacom.org](#); [craig@ilsoy.org](#); [Anna Leigh Peek](#); [Brian Baenig](#); [bill.zucker@ketchum.com](#); [Enciso, Maxine](#); [Melissa Kinch](#) ([melissa.kinch@ketchum.com](#)); [Mary Seltzer](#) ([Mary.Seltzer@ketchum.com](#)); [leah.dorman@pahc.com](#); "Cathy Riley" ([Cathy@MNsoybean.com](#)); [Cindy Cunningham](#); [Darren Wallis](#); [sarah.hull@syngenta.com](#); [qmarshall@mocom.org](#); [gianino@ncga.com](#); [Hurst, Blake](#); [Jane Ade Stevens](#); [Katie Foster](#); [Genifer Sqroi](#); [Allison Garriga](#); [Mark Nortman](#); [Jennifer Johnson](#); [Laurie Schneider](#); [Kat Novak](#); [Gene Hall](#); [James Massie](#); [Liz Ireland](#); [Jay Vroom](#); [victor@nebraskasoybeans.org](#); [Tom Slunecka](#) ([tom@mnsoybean.com](#)); (b) (6); [Robin Boucher](#); [Dennis Kelley](#); [Orso Mike](#)
Subject: Clean Meat - WSJ Forum Overview.
Date: Monday, October 16, 2017 10:08:14 PM

Good Morning,

Last week, USFRA attended the Wall Street Journal – Global Food Forum. As follow up to that particular one day event, the WSJ published multiple stories today about the future of food and the food industry. A substantial portion of the morning at the WSJ Forum was focused on meat substitutes and company leaders from Memphis Meats and Beyond Meat, Uma Valeti and Ethan Brown, respectfully. Ethan Brown declared meat production an environmental tragedy. I signed up for the Memphis Meats lunch table and was asked by Mr. Valeti what I thought the meat industries response would be to their product. I told them there was a long way to go before they had a marketable product, but they should seek marketing and promotional language that wasn't so divisional and false regarding the farm animal industry.

As you will read below, Paul Shapiro from HSUS made it a point to use the term "Clean Meat" multiple times throughout the day. So much so, that Daren Coppock, the CEO of the Ag Retailers Association brought the topic up to FDA Commissioner, Scott Gottlieb during a Q&A session later in the day. Daren's question was specific around the use of certain words and claims on labels that the FDA needed to address. The answer was not surprising...funding and personnel limitations.

Please review the following for additional information on this particular topic. You will see that we left the conference and immediately investigated the term "Clean Meat" from a trademark perspective, but we missed it by seven months. (Completely my fault, I should have jumped on it when I first heard last winter.)

Clean Meat

Besides cultured meat and in vitro meat, the terms synthetic meat, vat-grown and lab-grown meat have been used to describe meat grown in a cell culture. Advocates and companies that support the technology prefer the alternative "clean meat," because they claim the name better reflects the production and benefits of the meat but it seems to be more about rebranding. A study about public attitudes towards "cultured meat" found only a third of consumers were willing to regularly eat

cultured meat rather than conventionally produced meat because they were concerned about cost, flavor and it being unnatural.

The trademark for “Clean Meat” was requested in March 2017 by Brad Craner, the Head of Wholesale Risk Management at multinational insurance firm Zurich North America. Craner does not appear to have any ties to the food industry - it is likely he bought the trademark as an investment. Likewise, the handles [@CleanMeat](#) and [@CleanMeats](#) have been registered on Twitter since May 2016, but the accounts are completely unused. USFRA currently possesses the Twitter handle [@clean_meat](#).

Media use of the term “clean meat” began when the Good Food Institute published an article in the [Huffington Post](#) that claims clean meat “is more accurate” than cultured meat. Interest increased at the end of this summer after Bill Gates and Richard Branson invested in Memphis Meats. “Clean meat” has since appeared in publications like the [Los Angeles Times](#), [Bloomberg](#), [the Wall Street Journal](#), [the Guardian](#), [Fortune](#), [Forbes](#) and [Forbes again](#). Paul Shapiro ([@PaulHShapiro](#)), the Vice President of the Humane Society of the United States, will publish a book entitled *Clean Meat: How Growing Meat Without Animals Will Revolutionize Dinner and the World* on Jan 2, 2018.

[The Good Food Institute \(GFI\)](#) is a U.S. nonprofit that promotes "clean meat" alternatives to conventional animal agriculture products = with several nonprofits (New Harvest, Modern Agriculture) and companies (Memphis Meats, Mosa Meats, Super Meats). [Their website](#) claims that, “rather than obtaining meat from animals raised on environmentally destructive factory farms and slaughtered in filthy slaughterhouses, clean meat is produced by taking a small sample of animal cells and replicating them in a culture outside of the animal. The resulting product is 100 percent real meat, but without the antibiotics, E. coli, salmonella, or waste contamination – all of which come standard in conventional meat production.” Memphis Meats calls itself the [leading clean meat company](#) in the U.S.; they released the “first clean meatball” in February 2016 and the [world’s first clean poultry](#) in March 2017.

Randy P. Krotz
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From: [Dave Pyburn](#)
To: [Dan Kovich](#); [Liz Wagstrom](#)
Cc: [Steve Larsen](#)
Subject: RE: CFSAN/FDA Public Meeting on cultured meat
Date: Monday, June 18, 2018 6:09:00 PM

Dan:

Please plan to take notes and then let's discuss between the 4 of us on what you learn. Thanks.

Dr. Dave Pyburn
Vice President of Science and Technology
National Pork Board
1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634
Cell: (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

From: Dan Kovich <Kovichd@nppc.org>
Sent: Monday, June 18, 2018 5:02 PM
To: Dave Pyburn <dpyburn@pork.org>; Liz Wagstrom <WagstromL@nppc.org>
Subject: Re: CFSAN/FDA Public Meeting on cultured meat

I'm definitely planning on attending; though we do not yet have a comment strategy. Full slew of FSIS meetings Thursday.

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From: Dave Pyburn <dpyburn@pork.org>
Sent: Monday, June 18, 2018 5:15:58 PM
To: Dan Kovich; Liz Wagstrom
Subject: FW: CFSAN/FDA Public Meeting on cultured meat

Dan and Liz:

Are either one of you planning to attend this meeting? Do you want me to send a pork safety staff person to attend?

Dr. Dave Pyburn
Vice President of Science and Technology
National Pork Board
1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634
Cell: (b) (6)
Fax: 515-309-5715
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Center for Food Safety and Applied Nutrition Constituent Update

[View Past Updates](#)

FDA Announces Public Meeting to Discuss Foods Produced Using Animal Cell Culture Technology

June 15, 2018

The U.S. Food and Drug Administration announced today a public meeting to discuss foods produced using animal cell culture technology. The public meeting will be held on July 12, 2018 from 8:30 a.m. until 3:00 p.m. at the Harvey W. Wiley Federal Building, 5001 Campus Drive, Auditorium (first floor), College Park, MD 20740.

Cell culture technologies that have been increasingly used to produce cells and tissues for human therapeutic use are now being used by the food sector to create innovative products that resemble conventional meat, poultry, and seafood. The FDA has multiple authorities and programs that can support efforts to safely bring products with new ingredients to the market. Food safety is at the core of the agency's mission to protect and promote public health for our nation's consumers.

The FDA has extensive experience applying its existing authority flexibly and effectively to rapidly evolving areas of technological innovation such as plant biotechnology. We look forward to sharing our experiences in evaluating and ensuring the safety of novel technologies in the food sector at this upcoming public meeting, while we also discuss these issues with, and gather relevant data and information from, stakeholders.

The public meeting will give interested parties and the public an opportunity to comment on these emerging food technologies. Specifically, the agency is asking for input, relevant data and information on the following questions:

- What considerations specific to animal cell culture technology would be appropriate to include in evaluation of food produced by this method of manufacture?
- What kinds of variations in manufacturing methods would be relevant to safety for foods produced by animal cell culture technology?
- What kinds of substances would be used in the manufacture of foods produced using animal cell culture technology and what considerations would be appropriate in evaluating the safety of these uses?
- Are the potential hazards associated with production of foods using animal cell culture technology different from those associated with traditional food production/processing? Is there a need for unique control measures to address potential hazards associated with production of foods using animal cell culture technology?

While the primary subject of the meeting will focus on food safety, FDA recognizes the importance of other issues related to foods produced through animal cell culture technology, such as labeling, and FDA welcomes comment on these other issues and expects that they will be the focus of future engagement with stakeholders and the public. We intend to share our initial thinking for how we intend to appropriately apply our existing regulatory tools and policies to this novel area of technology. In addition, we plan to leverage the expertise of the FDA Science Board during their regular scheduled meeting in October to further inform our efforts.

As this field continues to advance, it will be important for FDA to provide timely information to both consumers and industry given the Agency's expertise and role in advancing food safety. The agency is committed to working with stakeholders to foster innovation while ensuring the safety of our Nation's food supply.

The meeting format will include introductory presentations and multiple opportunities for stakeholders and members of the public to express their opinions through oral presentations. Parties who are unable to participate in person will be able to join the meeting via live webcast.

Public meeting attendees are encouraged to [register online](#) to attend the meeting in person or by live webcast. Registration is free, and early registration is strongly recommended because seating is limited. For questions regarding registration, contact Cindy Nachman-Senders, CNS Consulting Group, 7826 Whiterim Terrace, Potomac, MD, 20854, phone: 301-648-4466, email: cindy@cnsconsultinggroup.com.

For general questions about the meeting or to request special accommodations due to a disability, contact Juanita Yates, Center for Food Safety and Applied Nutrition (HFS-009), Food and Drug Administration, 5001 Campus Dr., College Park, MD 20740, phone: 240-402-1731, email: Juanita.Yates@fda.hhs.gov.

Important Dates to Remember:

- Request special accommodations due to disability June 28, 2018
- Request to make an oral presentation June 28, 2018
- Advance Registration July 5, 2018
- Public Meeting July 12, 2018, 8:30 a.m. to 3:00 p.m.
- Deadline to submit written/electronic comments September 25, 2018

For Additional Information:

- [Federal Register Notice announcing the meeting](#)
- [Register Online](#)
- [Public Meeting page](#)

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From: [Phil Lofgren](#)
To: [Adria Huseth](#)
Subject: Cover Story - INFORM, Feb 2018
Date: Tuesday, February 6, 2018 2:59:18 PM
Attachments: [INFORM-InVitroMeat_0001.pdf](#)

FYI -

The cover story of the Feb 2018 issue of INFORM (AOCS publication) is: **Where's the cow? In Vitro Meat.**

This review of "Clean Meat" provides an overview of where research currently stands and discusses some of the potential benefits, and challenges of such products.

Phil

Phil Lofgren, Ph.D.
Consultant, NPB Nutrition Research

Contact Info:

Phone: 708-383-3577

Email: (b) (6)

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INFORM

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Where's the cow?

IN VITRO MEAT

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The case for "bad" food

Clean meat



Laura Cassiday

- Clean meat—also known as lab-grown, *in vitro*, or cultured meat—is meat that is grown in cell culture, rather than in an animal's body.
- Potential benefits of clean meat include sustainability, environmental friendliness, animal welfare, food safety, and novel foods.
- Technological challenges include scaling up the production process, reducing cost, optimizing serum-free culture media, producing structured meats, and adding fat.
- Consumer acceptance of clean meat is still uncertain.

In 1932, in a collection of essays entitled *Thoughts and Adventures*, British statesman Winston Churchill made a bold prediction: "Fifty years hence, we shall escape the absurdity of growing a whole chicken in order to eat the breast or wing, by growing these parts separately under a suitable medium." Although this idea may still seem like science fiction, in recent years several companies have made great strides in developing lab-grown or "clean" meat. If the technology reaches its full potential, clean meat could help satisfy the planet's growing demand for protein, and also provide benefits for the environment, animal welfare, and food safety.

By 2050, worldwide meat consumption will increase by 73%, according to a 2011 United Nations Food and Agriculture Organization (FAO) report (<http://tinyurl.com/FAO-livestock2>). This surge is driven by the expanding world population, as well as by increased meat consumption in developing countries. The livestock sector already consumes about 70% of global agricultural land, divided between animal grazing and feed crops (FAO, 2009, <http://tinyurl.com/FAO-livestock1>). Thus, under the

current system of livestock production, not enough land will be available to satisfy the growing demand for meat, and meat will become a scarce, expensive luxury item.

An obvious solution would be to substitute plant- or insect-based proteins for meat in the human diet. However, humans have consumed meat since the dawn of the species' evolution (Larsen, C.S., *J. Nutr.* 133: 3893S-3897S), and meat is a rich component of numerous culinary traditions. Therefore, many people crave meat and find vegetarian diets difficult to follow. Vegetarian foods that mimic meat (e.g., veggie burgers and meatballs) have been introduced, but these products have so far failed to exactly replicate the complex flavor and textural profiles of real meat. Although many challenges still need to be overcome, clean meat may be a solution to the world's looming protein shortage that allows people to maintain their dietary preferences.

FIRST BITES

Clean meat is meat that is grown in cell culture, rather than inside animals. Also known as cultured meat, *in vitro* meat, or lab-grown meat, "clean meat" is the term preferred by proponents because the meat is reportedly cleaner than meat from slaughtered animals in terms of both sanitation and environmental friendliness (Friedrich, B., <http://tinyurl.com/clean-meat>, 2016). The term "clean" may also refer to the conscience of the consumer because no animals must be slaughtered to produce the meat. Instead, stem cells are removed from an animal by a harmless biopsy and then cultivated *in vitro* to form muscle fibers.

The *in vitro* cultivation of muscle fibers was reported as early as 1971, when a researcher grew guinea pig aortic smooth muscle in Petri dishes (Ross, R., <http://dx.doi.org/10.1083/jcb.50.1.172>). In the 1990s, the US National Aeronautics and Space Administration (NASA) took interest in clean meat as a possible protein source for astronauts during long space voyages. In 2002, a NASA-funded research project produced fish "filets" from goldfish skeletal muscle explants that were expanded *in vitro* (Benjaminson, M.A., *et al.*, [https://doi.org/10.1016/S0094-5765\(02\)00033-4](https://doi.org/10.1016/S0094-5765(02)00033-4)). The filets, which were fried and breaded, were judged by a food panel to resemble and smell like real fish filets, although US Food and Drug Administration regulations prevented the panelists from actually tasting the experimental food.

In 2004, the Dutch government began funding research on cultured meat. The project focused on three areas: stem cell biology, tissue engineering, and culture media. Although the grant ended in 2009, Maastricht University professor Mark Post continued his research on cultured meat, funded by Google co-founder Sergey Brin. On August 6, 2013, Post and his colleagues presented the first lab-grown burger at a news

conference in London. The researchers produced the burger by removing stem cells from the shoulder muscle of a cow, growing them into thin strips of muscle in tissue culture flasks, and combining about 20,000 strips to make a burger.

The lab-grown burger was seasoned and cooked in butter by a chef and tasted by Post, food writer Josh Schonwald, and food researcher Hanni Rützler (Fig. 1). "I know there is no fat in it, so I didn't really know how juicy it would be, but there is quite some intense taste," said Rützler. "It's close to meat, it's not that juicy, but the consistency is perfect. This is meat to me" (Hogenboom, M., <http://tinyurl.com/bbc-meat>, 2016). The cost to make the burger: €250,000 (about \$330,000 USD). Post is now chief scientific officer of a Maastricht University spin-off company called Mosa Meat (Maastricht, The Netherlands), which plans to scale up and commercialize the technology.



FIG. 1. The world's first lab-grown hamburger, presented at a news conference in London in August 2013

Credit: David Parry/PA Wire

Post estimates that their cultured beef will likely be introduced to high-end restaurants and specialty stores in 3–4 years, and to supermarkets after another 2–3 years.

In March 2016, Memphis Meats, located in San Francisco, California, USA, unveiled the first lab-grown meatball, at a cost of \$18,000 USD per pound. A year later, the company rolled out samples of clean chicken nuggets and duck à l'orange (Fig. 2, page 8). By this time, the cost had dropped to \$6,000 per pound. The company's target launch for consumer products is 2021, with limited distribution to high-end restaurants in 2019. Memphis Meats recently obtained \$17 million in Series A funding from investors including Cargill and Bill Gates. The funding will be used to reduce manufacturing costs, quadruple the workforce, and accelerate throughput (Rousseau, O., <http://tinyurl.com/GMN-Cargill>, 2017).



FIG. 2. Clean poultry demonstrations from Memphis Meats: A) Southern fried chicken nuggets, and B) Duck à l'orange Credit: Memphis Meats

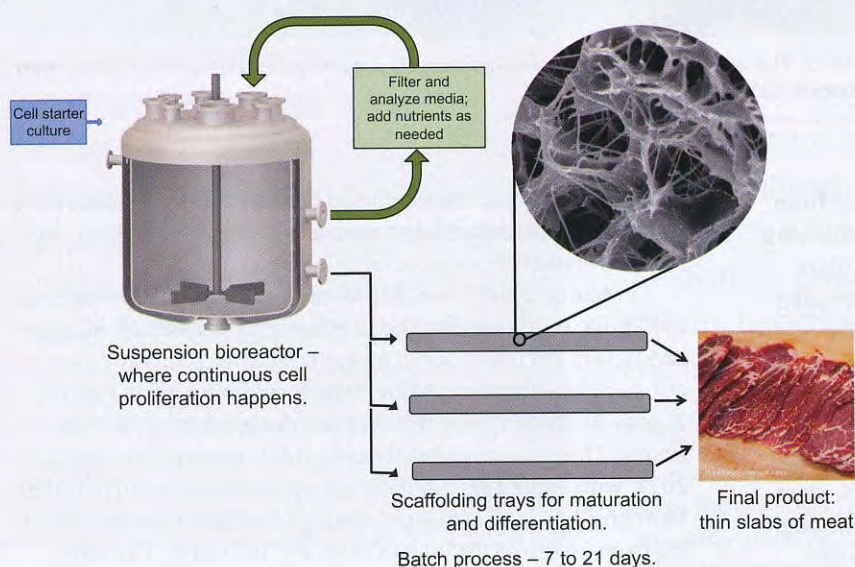


FIG. 3. A conception of how clean meat might be produced at the industrial scale Credit: The Good Food Institute

American food company Hampton Creek, headquartered in San Francisco, has also entered the clean meat scene. According to Eitan Fischer, director of cellular agriculture, the company expects their clean poultry to hit the market in late 2018, at a cost about 30% higher than conventional poultry. The company is building a platform for clean meat production that can be used for multiple species and products. Hampton Creek is in talks to license its clean-meat technology to some of the world's biggest meat companies, in an effort to radically scale up the technology for cost-efficient production (Rousseau, O., <http://tinyurl.com/GMN-hampton>, 2017).

THE MEAT OF THE MATTER

Although each company has its own proprietary techniques for producing clean meat, the overall process is similar (Fig. 3). First, researchers remove starter cells from the animal by a harmless needle biopsy and proliferate them *in vitro*. The starting cell type could range from embryonic stem cells to fully differentiated muscle cells. Although embryonic stem cells proliferate the most rapidly, they can be difficult to isolate and to direct toward differentiation into a specific cell type. On the other hand, fully developed muscle cells have already differentiated into the desired cell type, but they barely proliferate. Therefore, most companies are using satellite cells—adult stem cells that proliferate at an acceptable rate, but can differentiate only into skeletal muscle cells. Satellite cells, also known as myosatellites, are the cells responsible for muscle regeneration after an injury.

After isolating the desired cell type, researchers place the cells in culture medium in a stir-tank bioreactor. The culture medium provides nutrients, salts, pH buffers, and growth factors that allow the cells to proliferate. Historically, fetal bovine serum, which is collected from calf fetuses when a pregnant cow is slaughtered, has been widely used to culture mammalian cells. However, many biomedical companies have developed synthetic or plant-based growth media to avoid ethical issues and problems with batch-to-batch consistency associated with fetal bovine serum. Clean meat companies are working to adapt these serum-free formulations to their specific cell lines.

Satellite cells are anchorage-dependent, meaning that they only grow when adhered to surfaces, and not in suspension. At an industrial scale, cells could be grown in 25,000-L fermenter tanks on microcarrier

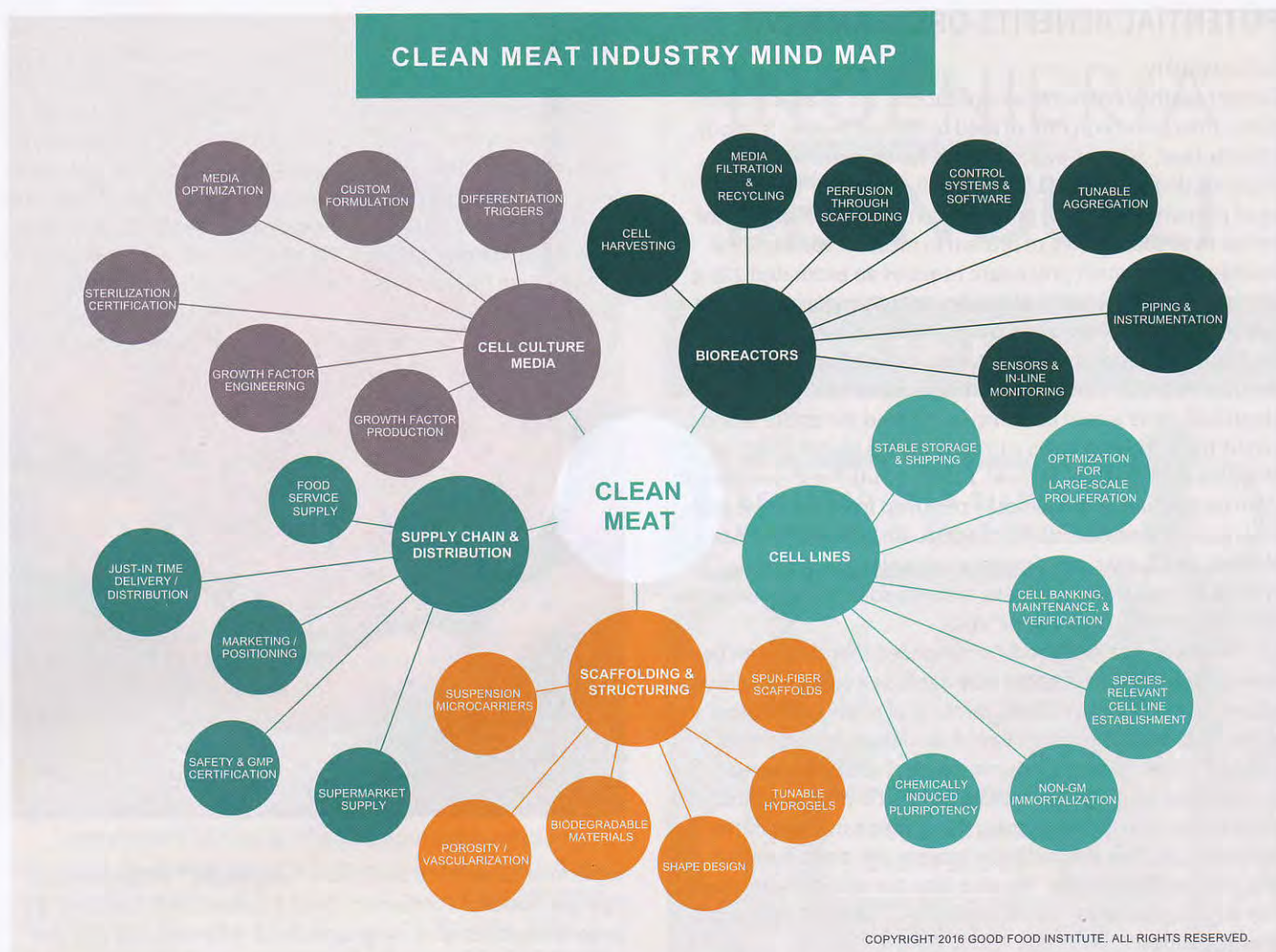


FIG. 4. A mind map demonstrating the primary elements needed for the large-scale production of clean meat Credit: The Good Food Institute

beads, which would offer a large surface area, or in cell aggregates. Once the satellite cells reach sufficient numbers, researchers alter the culture conditions to cause the cells to differentiate into skeletal muscle cells. The cells fuse into myotubes and begin to express early skeletal muscle markers such as myoD, myogenin, and embryonic isoforms of myosin heavy chain (Post, M.J., <http://dx.doi.org/10.1016/j.meatsci.2012.04.008>, 2012).

Researchers must apply a mechanical stimulus to trigger muscle protein synthesis and organization into contractile units. This can be accomplished by placing the cells on a collagen-based hydrogel. The muscle cells self-organize into tight fibers within the porous structure of the hydrogel, which creates tension in the fibers. Alternatively, Post's lab found that by seeding muscle cells around a cylinder of gel, the cells formed a ring-shaped muscle fiber, which could then contract upon itself. Electrical stimulation may further increase muscle protein synthesis, but not enough to justify the energy input required for large-scale production.

For a minced meat product such as hamburger, mature muscle fibers are harvested and assembled into the final product. Structured products, such as a steak or chicken breast, present a much greater technical challenge. For this purpose,

cultured meat developers are adopting techniques from the tissue engineering field, which seeks to grow new tissues and organs for medical purposes.

To produce structured meats, satellite cells must be seeded on a three-dimensional scaffold that periodically moves and stretches the developing muscle, simulating an animal's body. The scaffold, which should be either edible or biodegradable, may consist of a collagen- or cellulose-like gel that is porous to allow the diffusion of medium. To grow large samples, a blood-vessel-like system may be needed to circulate nutrients and oxygen throughout the tissue. 3D printing or spun-fiber platforms could allow tight control over pore size and microstructures within the scaffold (Specht, L., and Lagally, C., <http://tinyurl.com/GFI-clean-meat>, 2017). Theoretically, fat cells or other cell types could be co-cultured with muscle cells in specific regions of the scaffold to produce, for example, marbling in a steak.

The Good Food Institute, a nonprofit organization that promotes clean meat and plant-based alternatives to animal products, has produced a clean meat industry mind map that illustrates five key areas for advancement of the industry: cell lines, culture media, scaffolding and structuring, bioreactors, and supply chain distribution (Fig. 4).

POTENTIAL BENEFITS OF CLEAN MEAT

Sustainability

Current methods of livestock production are relatively inefficient. The conversion rate of feed to animal protein is about 15% for beef, 30% for pigs, and 60% for chickens (Post, M.J., <http://dx.doi.org/10.1111/nyas.12569>, 2014). For beef, 1.33 kg of protein (i.e., 7 kg of grain containing 19% protein) must be fed to produce 200 g of protein in meat. In contrast, the scaled-up clean meat procedure requires an estimated 225 g of nutrients (amino acids, glucose, etc.) to produce the same 200 g of protein. Thus, clean meat production is predicted to be about 6 times more efficient than conventional beef production. Because stem cells multiply exponentially, a herd of about 150 cows would be sufficient to feed the entire world, versus the 1.5 billion cows currently on the planet (Post, M.J., <http://dx.doi.org/10.1111/nyas.12569>, 2014). Fresh samples of stem cells would be periodically removed from live cows and proliferated, since stem cells can become genetically unstable after many divisions. Several companies are exploring options for maintaining genetic stability so that animals can be removed entirely from the process.

However, not everybody is convinced that cattle can be so readily replaced. "Beef cattle play a role in a sustainable food system," says Daren Williams, director of communications at the National Cattlemen's Beef Association in Centennial, Colorado, USA. "Cattle consume distillers grains from ethanol production, sugar beet pulp, potato co-products, and plant waste such as carrot tops. If you take cattle out of the equation, you lose the ability to upcycle this plant material into high-quality protein. You also lose the animal byproducts that go into a wide variety of products—industrial, food, and pharmaceutical."

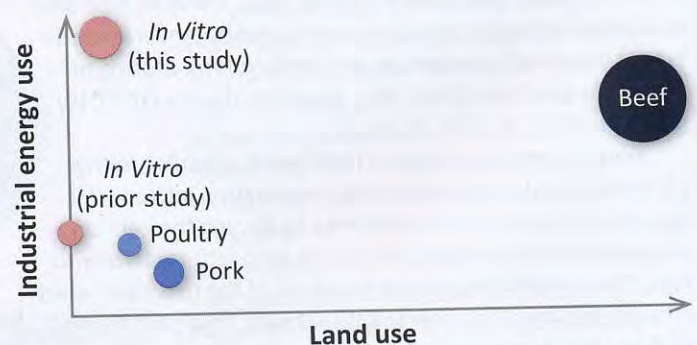
When a cow is slaughtered for beef, the rest of the carcass does not go to waste. Some of the many byproducts include leather from the hide; soaps, cosmetics, personal care products, and tires from fats; pet food, fertilizer, and gelatin from horns, bones, hooves, and blood; and vaccines and prescription medicines from organs and glands. "At this point, clean meat is still more theoretical than actual," says Jessica Meisinger, director of scientific education and communication at the National Renderers Association in Alexandria, Virginia, USA. "However, if it became stunningly successful and replaced meat to a sizeable extent, then I imagine there'd be some impact on the volume that renderers receive. And then that would probably have an impact on the price of downstream products such as leather."

Some companies are developing techniques to produce these downstream products without animals. For example, Geltor (San Leandro, California, USA) has developed a process to produce gelatin with genetically engineered microorganisms. And Modern Meadow (Nutley, New Jersey, USA) is using genetically engineered yeast to produce bovine collagen, which is assembled into fibers and then into sheets of leather that can be tanned, dyed, and finished.

"There are a lot of people looking at ways to provide a sustainable source of protein to feed a growing population," says Williams. "Meanwhile, back at the ranch, we're invest-



ing in how to produce beef more sustainably." Williams notes that the National Cattlemen's Beef Association is conducting a large research project on geographical differences in sustainability. In some cases, land that is not suitable for crop production is fine for grazing cattle. "We could upcycle this land into high-quality protein," says Williams. "In vitro meat will not provide those benefits. There will likely be negative consequences of taking beef cattle out of the food system."



Bubble area is proportional to global warming potential.

FIG. 5. An anticipatory LCA predicts that clean meat will require less land but more energy than conventional meat. The analysis also predicts that clean meat will have more global warming potential than conventional poultry and pork, but less than beef. "Prior study" refers to the LCA conducted by Tuomisto and de Mattos in 2011.

Credit: Reprinted with permission from Mattick, C.S., et al., *Environ. Sci. Technol.* 49: 11941–11949. Copyright 2015 American Chemical Society.

Environmental benefits

Clean meat proponents claim that the technology will be much friendlier to the environment than conventional livestock production. Currently, livestock raised for meat consumes about 30% of global ice-free land and 8% of global freshwater, while producing 18% of global greenhouse gas emissions (Tuomisto, H.L., and de Mattos, M.J., <http://dx.doi.org/10.1021/es200130u>, 2011). In 2011, researchers at the University of Oxford, in the UK, conducted a life cycle assessment (LCA) of the environmental impacts of large-scale cultured meat production. The LCA analyzed the energy, land, and water requirements to produce a minced-meat type product. Because a large-scale production system for clean meat has not yet been reported, the LCA was based on a hypothetical system that used cyanobacteria hydrosylate as the source of nutrients and energy, supplemented with growth factors.

The researchers estimated that the production of 1,000 kg of cultured meat would require 7–45% less energy, 99% less land, and 82–96% less water, depending on the species of meat, compared with the same mass of regular meat produced in Europe (Tuomisto, H.L., and de Mattos, M.J., <http://dx.doi.org/10.1021/es200130u>, 2011). The greatest savings in energy, land, and water were predicted for cultured beef, and the least for cultured poultry. Cultured poultry actually required more energy to produce than conventional poultry, but less land and water. The researchers predicted that cultured meat would produce 78–96% fewer greenhouse gas emissions than regular meat.

A more recent LCA using different input parameters predicted that clean meat would require less land and water than conventional livestock, at the expense of more energy (Mattick, C.S., *et al.*, <http://dx.doi.org/10.1021/acs.est.5b01614>, 2015) (Fig. 5). The global warming potential (based on greenhouse gas emissions) was higher for clean meat than for conventional poultry and pork, but lower than for beef. Instead of using cyanobacteria hydrosylate as the culture medium, this analysis used serum-free medium supplemented with soy hydrosylate. Also included in the 2015 LCA, but not in the 2011 analysis, were land, water, and energy requirements for basal medium production, bioreactor cleaning by steam sterilization, a change of medium between the proliferation and differentiation phase, and the production facility.

Mattick and coworkers compare the emergence of clean meat to the Industrial Revolution, when automobiles burning fossil fuels replaced work done by horses eating hay (<http://dx.doi.org/10.1021/acs.est.5b01614>, 2015). Similarly, clean meat production would substitute industrial processes, which require energy inputs, for the internal biological functions performed by animals, such as digestion, respiration, and temperature regulation. "As such, *in vitro* biomass cultivation could be viewed as a renewed wave of industrialization" with complex trade-offs, the researchers say.

The authors of both LCAs acknowledge that their studies suffer from large uncertainties because no large-scale clean meat facility currently exists. The analyses are conducted for a hypothetical facility using established cell culture techniques, but the technology for producing cultured meat is likely to

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change rapidly. For example, one of the major energy inputs for the 2015 LCA was steam sterilization of the bioreactor tanks, which is performed in the biopharmaceutical industry. However, this type of sterilization may not be needed for food products—cleaning with soap may be sufficient, or a sterile, biodegradable tank liner may someday be developed for this purpose.

Williams believes that it is too early to say whether clean meat will be more environmentally friendly than traditional livestock production. In contrast to the hypothetical nature of the clean meat LCAs, “we’ve done an LCA on every single input used to produce a pound of conventional beef, down to the HVAC costs and toilet paper used in the meat processing plant,” he says. “We know which areas we can improve.”

Animal welfare

Perhaps the clearest benefit of clean meat would be in the area of animal welfare. No longer would large numbers of animals need to be bred and raised, often in cramped, unsanitary conditions, and then slaughtered by procedures that may or may not be painful. Instead, a small number of companion animals could be kept as living stem cell donors. The People for the Ethical Treatment of Animals (PETA) has supported clean meat, and in 2008 PETA offered a \$1 million prize to the first company to bring lab-grown chicken meat to the market by 2012.

Clean meat would allow vegetarians who abstain from meat for ethical reasons to enjoy the flavor and texture of

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meat without the guilt. However, Post says that vegetarianism is even better for the environment than clean meat. "Cultured meat is not intended for the vegetarian or vegan market. In fact, we would consider it unwanted if vegetarians and vegans start to eat meat as a result of our endeavors," he says. "That would be the opposite trend of what we are trying to achieve."

Yet because the majority of people in the world are meat eaters, clean meat has the potential to drastically reduce the suffering of billions of common livestock animals such as cows, pigs, and chickens. In addition, most clean meat platforms are designed to transfer to a variety of species, so less common specialty meats that cause particular animal suffering, such as whale meat or foie gras, could be humanely produced. A Japanese company called Integriculture, Inc., has been culturing chicken pancreas, liver, muscle, and intestinal cells for large-scale clean meat production. They anticipate a commercial launch of "clean foie gras" in 2021 or 2022 (Wan, L., <http://tinyurl.com/clean-foie-gras>, 2017).

Food safety

Some experts believe that clean meat would be safer for human consumption than traditional meat. Food-borne pathogens such as *Salmonella* and *E. coli* are present in the intestinal tracts of livestock and can be transferred to meat during slaughter. Because clean meat is grown in a sterile bioreactor tank, contamination with these and other pathogens can be prevented, or at least readily detected before the product goes to market. Clean meat may also reduce the incidence of emerging diseases such as avian and swine influenza and prion diseases, which have been associated with livestock farming (Post, M.J., <http://dx.doi.org/10.1016/j.meatsci.2012.04.008>, 2012).

In addition, clean meat might help reduce the antibiotic resistance of pathogens that has resulted from the widespread use of antibiotics in livestock. Mosa Meat and Memphis Meats both claim that they do not require antibiotics because of their sterile lab processes; neither do they need growth-promoting hormones (Zaraska, M., <http://tinyurl.com/WP-labmeat>, 2016).

Novel foods

By altering cell culture conditions or types of cells, researchers could perhaps produce more healthful meats than those found in nature. Clean meat could be fortified with beneficial fatty acids, such as the omega-3s found in fatty cold-water fish. Saturated fats could be replaced with polyunsaturated fats. Theoretically, cells from different species could be combined to produce meat blends with new flavor, texture, and nutritional profiles.

"Clean meat version 1.0 involves recapitulating as quickly as possible the products that consumers already know and love," says Liz Specht, senior scientist at the Good Food Institute. "But for version 2.0, the question is, could we actually tailor the composition of these cells to make them, for example, healthier?" She notes that in some cases, simply adding fatty acids or their precursors to the culture medium may effectively seed meat cells with the desired fats. In other cases, researchers might need to genetically modify the metabolic pathways of cells to produce specific fatty acids or other nutrients.

CLEAN MEAT CHALLENGES

Serum-free cell culture media

Many clean meat companies have prioritized finding synthetic or plant-based substitutes for cell culture media that contains fetal bovine serum, mainly because the serum will become obsolete if clean meat is successful in substantially reducing the slaughter of cattle. Other issues with fetal bovine serum are that its composition is poorly defined, and the quality can be inconsistent. "It can be very hard to get large quantities of high-quality serum," says Specht. "The other problem is that serum is designed to operate in the context of a living organism, where you need a balance of red lights and green lights to control cell growth. The advantage of serum-free media is that you can only put in the growth factors you want in your particular system, so you're not hampered by all of the conflicting signals that come with this black-box mixture of growth factors from a calf."

For many cell types, serum-free culture media that contain recombinant growth factors have already been developed. However, satellite cells require unusually high concentrations of serum for growth, so finding a non-animal substitute that works as well as serum has been challenging (Post, M.J., <http://dx.doi.org/10.1111/nyas.12569>, 2014). Currently, serum-free media are more costly than media containing fetal bovine serum, which could hamper efforts to scale up clean meat production. In the future, as serum becomes scarcer and recombinant growth factors are mass produced, serum-free media could become the less expensive alternative.

Both Hampton Creek and Memphis Meats claim to have developed viable alternatives to fetal bovine serum, but the companies are tight-lipped about proprietary details. Post says that his group has been reasonably successful in eliminating serum from the culture medium, but they have not yet conducted a high-throughput analysis to optimize a synthetic formulation.

Scaling up and reducing cost

One of the biggest challenges for bringing clean meat to market is transitioning from the lab scale to the industrial scale. Clean meat factories, or "carneries," would likely resemble beer breweries, with giant tanks for growing meat similar to beer fermentation tanks. One run in a 20,000-L bioreactor would require about 1 month for all steps (cleaning, filling, sterilization, cell proliferation and differentiation, etc.) (van der Weele, C., and Tramper, J., <http://dx.doi.org/10.1016/j.tibtech.2014.04.009>, 2014). Ten runs per year could supply the meat demand (10 kg per person per year) of about 2,560 people, from a single bioreactor tank. Carneries may partner with existing meat companies that have an established infrastructure for packaging, distributing, and marketing meat.

Post's 2013 burger was so expensive because the production took place at a laboratory scale (Datar, I., and Luining, D., <http://tinyurl.com/NH-cultured-meat>, 2015). Through a painstaking process, skilled technicians produced tiny strands of beef in thousands of standard tissue culture flasks, which they then combined to make the burger. Post estimates that scaling up the current technology would reduce the price of the €250,000 (\$330,000 USD) burger produced in 2013 to about

€8.5 (\$10 USD). With technological improvements, clean meat could eventually reach price parity with conventional meat.

"Everyone agrees that the cell culture media will be the main cost driver once clean meat production is at an industrial scale, so I did a pretty detailed cost analysis on the components of the media," says Specht. "It was surprisingly straightforward to get price parity with conventional meat, without hanging our hat on some kind of technological moonshot." Simply obtaining bulk pricing for the basal components of synthetic media, such as salts, sugars, amino acids, and lipids, would substantially reduce cost. "Those materials are produced in huge quantities for the food industry, so you can often find metric-ton pricing of those at food-grade quality."

But the most expensive component of synthetic media is typically the growth factors, which are now produced and used in small quantities for bench and clinical applications. "Growth factors are costing 1 million dollars per gram or something absurd, but it's a relatively straightforward scaling issue to simply produce those in a recombinant production platform, in the same way that the DuPonts and Novozymes of the world are producing enormous quantities of food processing enzymes," says Specht.

Structured meats

Thus far, public demonstrations of clean meat have consisted of ground meat, sausages, nuggets, and Spam-like meat. Structured meats such as steaks and chicken breasts will require innovations in scaffolding, vascularization, and other aspects of tissue engineering. Hydrogel scaffolds could be engineered to allow fine-tuning of stiffness, cell adherence, and the controlled release of growth factors (Specht, L., and Lagally, C., <http://tinyurl.com/GFI-clean-meat>, 2017). In this way, different cell types could be made to differentiate along defined regions, producing, for example, the marbling found in a steak or the flakiness of a fish filet.

According to Specht, clean meat will probably come to the market in phases: first, hybrids of clean meat with plant-based meat; second, ground meat products such as nuggets and burgers; and third, structured meats such as steaks and chicken breasts.

Incorporating fat

Fat imparts flavor, aroma, and texture to meat. So far, clean meat prototypes have lacked fat. Many companies are trying to determine the best way to incorporate fat into clean meat. One option is to culture adipose-tissue-derived stem cells, which differentiate into adipocytes, either together with or separately from satellite cells. An Israeli company called Future Meat Technologies is taking a different approach—using mesenchymal stem cells, which can differentiate into both myocytes and adipocytes, as the starting material (Watson, E., <http://tinyurl.com/future-meat>, 2017). Mesenchymal stem cells have the added benefit of being able to grow more rapidly, and in less expensive media, than satellite cells.

"Most of the companies are focusing on muscle cells at the moment because it's much easier to optimize a system

when you've only got one cell type there," says Specht. "Also, certain types of intermediate stem cells almost default to adipocytes just by adding certain fatty acids to the growth media, so it's a bit easier than getting cells to differentiate into muscle." Specht notes that at the bench scale, researchers have demonstrated co-cultures of skeletal muscle with fat cells. However, companies may find it more efficient to incorporate plant-based fats into clean meat, she says.

Consumer acceptance

Even if the technological hurdles to clean meat commercialization are overcome, there is no guarantee that consumers will accept the products. Similar to genetically modified organisms (GMOs), clean meat may be considered by some to be "unnatural" or a "Frankenfood." However, cultured meat proponents argue that current meat production systems are far from "natural."

In 2012, researchers analyzed the reactions and attitudes toward clean meat of 179 meat consumers in Belgium, Portugal, and the United Kingdom (Verbeke, W., *et al.*, <http://dx.doi.org/10.1016/j.meatsci.2014.11.013>, 2015). Upon learning about clean meat and how it is produced, consumers' immediate reactions were visceral, including disgust and fear. Many of the study participants viewed clean meat as unnatural and were concerned about the meat's safety and healthfulness. Although consumers were willing to admit that clean meat could have benefits at the global level (e.g., reducing world hunger or helping starving children in third-world countries), they saw little or no benefit to their own lives. The study participants also worried about the loss of culinary traditions, rural livelihoods, and the preservation of livestock. Some people were concerned that pastures previously occupied by cows would be built upon, swallowing up open spaces and increasing urban sprawl. "For our participants, cultured meat seemed to open a Pandora's box of unknown societal, environmental, and technological evils," the researchers say.

A 2016 survey of 673 US consumers revealed that about 65% of respondents would be definitely or probably willing to try clean meat (Wilks, M., and Philips, C.J.C., <http://dx.doi.org/10.1371/journal.pone.0171904>, 2017). Among the consumers willing to try clean meat, about 33% would be likely to consumer it regularly, and only about 15% would pay more for clean meat than conventional meat.

Although clean meat promises many benefits, the production process must be scaled up and refined to make clean meat marketable. Meanwhile, most ranchers are not exactly concerned about their lifestyle becoming obsolete. "In general, it's not about us versus them, lab-grown meat replacing traditional meat; it's about supplying enough protein to feed the world population," says Williams. "Traditional meat, lab-grown meat, plant-based protein—we'll need a lot more of everything. But there's a lot of work to be done to determine the viability and consumer acceptance of *in vitro* beef."

Laura Cassiday is an associate editor of Inform at AOCS. She can be contacted at laura.cassiday@aoacs.org.

From: [Dave Pyburn](#)
To: [Gene Johnston](#)
Cc: [Cindy Cunningham](#)
Subject: RE: Cultured meat
Date: Wednesday, August 8, 2018 11:01:00 AM

Gene:

Thanks for taking the time to interview me this morning. Please let me know if you need further information or have something for Cindy and I to review.

Dr. Dave Pyburn
Vice President of Science and Technology
National Pork Board
1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634
Cell: (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

-----Original Message-----

From: Gene Johnston <(b) (6)>
Sent: Monday, August 6, 2018 2:40 PM
To: Dave Pyburn <dpyburn@pork.org>
Subject: Cultured meat

Hi Dave. Cindy Cunningham put me in touch with you. Does the Pork Board have a position statement about the development of cultured meat - grown in an incubator from animal muscle cells? Have you been involved in that discussion, and what is your stance on that technology?

Thanks!

Gene Johnston
Contributing Editor
Successful Farming magazine
515-473-1421

Sent from my iPad

Please conserve our natural resources, think twice before you print this e-mail.

From: [Rick Berman](#)
Subject: Lab-grown meat and FDA/USDA
Date: Tuesday, August 28, 2018 12:19:15 PM

Most of you have probably seen the story last week about the North American Meat Institute co-writing a letter with a lab-grown meat company calling for both FDA and USDA regulation of lab-grown meat. While I appreciate the need for consistent and acceptable labels, I fear the whole label issue is a distraction from the larger consumer acceptance picture. There is a fixed amount of bandwidth in the industry for any one issue. We need to spend resources correcting misinformation promoting alternative protein beyond fighting over alternative labels.

Barring a skull and crossbones or pejorative terms, consumer demand will not be substantially depressed by a descriptive label. The consumer who is presently buying almond milk or soymilk understands this is not milk from a cow. They are buying it BECAUSE it is a non-animal derived protein. And any "fake meat" label will most likely be neutral signifying that it is not animal meat---just what the consumer may want! It will be more of an identifying label rather than a depressing label.

It is incumbent on the natural occurring protein industries to define plant and lab-grown meat. If we don't engage in branding, plant and lab-grown meat proponents will define "clean meat." And given the hundreds of millions of dollars invested in these products, I expect they will have a strong marketing campaign (the Y Combinator, a well-known Silicon Valley incubator for startups, is funding the trade association that pushes lab-grown meat).

If we get involved early, we have an opportunity to seed new information in the public's mind. We can influence how they view these products, and give them an appropriate "brand" that is beyond whatever becomes the government term. Our education campaign on ingredients and processing can be much more powerful than any FDA or USDA label if we are invested in "first impressions" while leading and not chasing perceptions.

We have a second Chicago meeting on the issue on 9/13. We will make recommendations after that meeting.

Rick



Please conserve our natural resources, think twice before you print this e-mail.

From: [Rick Berman](#)
To: [Bill Even](#)
Subject: First Lab-Grown Steak Revealed
Date: Thursday, December 13, 2018 4:04:52 PM

Bill,

Aleph Farms, an Israeli startup in the lab-grown meat sector, announced yesterday that it has developed world's first lab-grown steak. The steak right now costs around \$50 to produce, but the company indicates it hopes to have the product ready for market in two years.

More details here: <https://www.foodingredientsfirst.com/news/the-evolution-of-lab-grown-meat-aleph-farms-creates-first-cell-grown-steak.html>

This new development also shows that it's not just ground meat products that these firms are trying to replace in the near future. 2020 is right around the corner, and we are anticipating that JUST Foods will be releasing its lab-grown chicken product for market by the end of the year.

Public perception of these products is being steered in one direction. The media by and large presents lab-grown meat as cool, innovative, and the future. Additionally, these companies and the media reinforce the activist narrative that meat production is environmentally unfriendly and that antibiotic/hormone use is bad.

I've previously met with some industry leaders on ways to position these consumer products in a different light, but there was no consensus on action.

-Rick
202-463-7100

Please conserve our natural resources, think twice before you print this e-mail.

From: [Rick Berman](#)
Subject: The Growing Threat of Substitute Meat
Date: Wednesday, July 25, 2018 5:15:41 PM
Attachments: [180723_WallStreetJournal_CellGrownMeat3.pdf](#)

I've attached two letters that were recently published in the Wall Street Journal. It is one more indication that the legitimacy of the substitute meat market is growing.

Our second meeting is being held on 9/13. This is to accommodate those who could not make the first meeting six weeks ago. I expect several major cattle and chicken interests to be represented. Let me know if you would like to come.

I'm also in conversations with some people in the milk business who may decide it is their interest to participate in a consumer education program.

Since our first meeting, we have gained additional information on the animal cell (vs plant based) manufacturing process. It is apparent that this technology is gaining legitimacy even before it has been proven. It is a signal that once proven these products will quickly gain market share.

If we are going to gain an upper hand in educating the consumer, we should not wait for these products to be available for purchase.

Rick



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THE WALL STREET JOURNAL.

New York, New York • July 23, 2018

Cell-Grown Meat Is Better for All of Nature

By: Bruce Friedrich & Elaine Livesey-Fassel

Growing crops to feed animals so we can eat meat is an extraordinarily inefficient production method, so it is encouraging to see that another conventional meat company has invested in clean meat (“Cell-Grown Meat Gets New Funding,” Business & Finance, July 17). The technology involves growing real meat directly from cells. Of course, with greater efficiency comes greater profit. I’m sure major U.S. meat processors and their counterparts in Israel, Switzerland and Germany don’t mind that clean meat will be better for the environment and won’t require the routine use of antibiotics, but their investment decisions are guided by profitability. If there could be a stronger endorsement of clean meat, I don’t know what it would be.

Bruce Friedrich
Co-founder and Executive Director
The Good Food Institute
Washington

So aware are we now of the abusive nature of factory and industrial farming of animals and the cost to our personal and national health that we are elated to learn of the worthy advancements of U.S. and European scientific efforts in creating edible, cost-friendly alternatives. I have tried each and every variety I have discovered in shops and restaurants—and have found them delicious. I compliment any endeavor that seeks to end the slaughter of animals on the current unsustainable scale, and look forward to more advancements of this nature with great hope for a kinder and gentler world.

Elaine Livesey-Fassel
Los Angeles

From: [CHRIS LAMB](#)
To: [CHRIS LAMB](#)
Subject: IMS 10th MARKETING WORKSHOP 2019....LAUNCH
Date: Monday, October 29, 2018 8:36:15 AM
Attachments: [IMS-Register.pdf](#)

Good afternoon everyone,

On behalf of Canada Beef, Canada Pork International and the IMS Marketing Committee I am delighted to formally launch the 10th Marketing Workshop which is being held in Banff, Canada from March 12-14, 2019.

A major feature and strength of the Workshops to date has been the open sharing of knowledge and experiences with colleagues from the worldwide red meat industry and this will continue in Banff in line with the attached programme.

Please register your attendance via the link to IMS on the flyer, similarly your accommodation on the direct link to the Fairmont Banff Springs Hotel.

If you need any more information please do not hesitate to contact me.

Best wishes

Chris Lamb

PS. Please feel free to circulate this e-mail and flyer to any colleagues who you think may wish to attend.

PPS. should you have any problems registering on the IMS site then just hit the "refresh" icon

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INTERNATIONAL MEAT SECRETARIAT

10TH MARKETING & COMMUNICATIONS WORKSHOP

MEAT FOR THE FUTURE

MEAT'S PLACE ON THE PLATE –
A GLOBAL FORUM

March 12 to 14, 2019

Fairmont Banff Springs, Alberta, Canada

Hosted by Canada Beef and Canada Pork International

Join us to spend 2 ½ days sharing our campaigns and consume insights from domestic and international markets and discussing the latest trends, challenges and opportunities facing our industry, with a particular focus on the potential to eat from a balanced/ethical/cultured meat and non meat alternatives.

[TO REGISTER CLICK HERE](#)

DELEGATE FEE: CND\$895 IMS Member Early Bird (by Dec 15), CND\$975 IMS Member Full Rate (post Dec 15), CND\$450 Guest (includes meals, events, no session attendance), CND\$995 for Non IMS members

HOEL RATE: CND\$223 p/night + taxes

Note: please book direct by [clicking here](#) or call In House Reservations on +1 403 762 6866. If the In House team is not available, the call will automatically be forwarded to Fairmont's Global Reservations Centre (available 24 hours a day, 7 days a week). We recommend that callers identify themselves by the conference name to ensure access to the Room Block conference rate) For delegates wishing to extend their stay Fairmont Banff Springs Hotel is Offering this rate for 3 nights, 15 - 17 March.

NOTE: Reservations will be accepted in the group block up to February 10.

FOR MORE DETAILS, PLEASE CONTACT ASHLEY@BEEFLAMB.NZ
OR CHRIS-LAMB@LIVE.CO.UK

MEAT FOR THE FUTURE

MEAT'S PLACE ON THE PLATE, A GLOBAL FORUM

TUESDAY MARCH 12TH

Arrival & networking

Historic tour of hotel and networking: "Canada's Cast le in the Rockies" has been providing legendary hospitality since 1888 in the heart of Banff National Park."

WEDNESDAY MARCH 13TH

Breakfast

SESSION ONE: LEARNING FROM OUR EXPERIENCES

Challenges of a divided and ever evolving media mix: digital/social media share of voice and new technologies. How do we position our industry for the on going challenges? Do we engage in discussions or decline?

Lunch

SESSION TWO: LAB GROWN/CELL CULTURED AND NON MEAT SUBSTITUTES

Plant and non meat foods are growing as an alternative to traditional meat proteins in applications.

An *Oh Canada* reception Fire Pit sponsored by Canada Beef and Canada Pork International

Dinner

THURSDAY MARCH 14TH

Breakfast

SESSION THREE: THE FUTURE IS ABOUT MORE THAN THE DOMESTIC MARKET ?
The new challenges of international trade. Differentiation in international markets.

SESSION FOUR: HOT TOPICS & HOT POTATOES

Your chance to introduce other issues affecting the red meat industry: sustainability, climate change, human health, increasing regulation... it's up to you!

CLOSING DISCUSSION AND REMARKS

LUNCH

In due course there will be a call for presentations from delegates.

In close proximity to the airport, the Canadian Beef Centre of Excellence is hosting Open House Days on Monday 11 March and Friday 15 March for delegates who wish to visit. Please book your visit in advance with Rachel: petes@canadabeef.ca.

From: [Dave Pyburn](#)
To: [Liz Wagstrom](#); [Dallas Hockman](#); [Tom Burkgren \(aasv@aasv.org\)](#); [Harry Snelson](#)
Subject: Regs and Cell Farming
Date: Friday, March 30, 2018 2:15:00 PM

FYI:

U.S. representative wants review of lab meat, cell-cultured food

Food Safety News, By Guest Opinion / March 30, 2018 *OpinionEditor's note: U.S. Rep. Rosa DeLauro, D-CT, sent the below letter regarding so-called lab meat and other cell-cultured foods to Gene Dodaro, comptroller general of the United States, on March 28.*

Dear Mr. Dodaro: I am writing to request that GAO investigate what regulatory framework, if any, exists for cell-cultured food products and how this framework compares to other international approaches. Cell-cultured food products include lab-grown meat (sometimes referred to as "cultured" or "clean" meat, derived from animal muscle cells) and animal-free milk (such as milk produced from fermented yeast and proteins around in cow's milk).

According to the U.S. Department of Agriculture (USDA), livestock and poultry account for over half of U.S. agricultural case receipts, often exceeding \$125 billion per year. Additionally, the United States is the world's largest producer of beef and poultry and a top producer and exporter of dairy products. Recent innovations in cell-cultured foods have caught the attention of producers, marketers, and venture capitalists alike. Over the past few years, some of the largest food companies in the United States have started to invest in cell-cultured technologies.

While not yet commercially available, the potential introduction of this new type of product into the nation's food supply and economy raises many important questions. For example, the U.S. Cattlemen's Association recently filed a petition with the USDA to exclude from the definition of meat any products not derived directly from animals. In addition, at least one dairy group has stated it believes the use of the word "milk" for animal-free products creates confusion in the minds of consumers and thus should be limited only to products derived from animals. On the other hand, producers of cell-cultured foods argue that the products are safe and more efficiently produced than meat or milk products from live animals.

To date, it remains unclear exactly how cell-cultured food products should be regulated. Agencies within USDA are responsible for ensuring the nation's domestic and imported commercial supply of meat, poultry, catfish, and egg products is safe, wholesome, and correctly labeled and packaged, providing scientific research to help ensure that the food supply is safe and secure, and that foods meet foreign and domestic regulatory requirements, among other responsibilities. FDA is responsible for ensuring that all domestic and imported food products, excluding meat, poultry, catfish, and processed egg products, are safe, wholesome, sanitary, and properly labeled. The Federal Trade Commission is responsible for enforcing prohibitions against false advertising for, among other things, food products.

Other countries are also starting to focus on cell-cultured food products. For example, on January 1, 2018, the European Union's (EU) new framework regulation on "Novel Food" went into effect. The regulation covers foods that, among other things, have not been consumed to a significant degree in the EU before May 15, 1997.

More information is needed for Congress to address this emerging sector in the United States and to ensure it is properly overseen by the relevant agencies once these products are commercially available.

In light of the above, I would like to request conduct a comprehensive review of the following:

- What unique challenges, if any, exist in overseeing the safety of cell-cultured foods in the United States?
- What regulatory framework and labeling requirements, if any, exist in the United States to oversee cell-cultured food products, and to what extent, if any, have relevant agencies begun preparing for the commercialization of cell-cultured foods?
- How do other countries, such as Canada, the European Union, and/or Japan, oversee cell-cultured foods?

If you have any questions regarding this request, please contact Christian Lovell of my staff. Thank you for your consideration of this request.

Sincerely,

Rosa L. DeLauro

Ranking Member

Subcommittee on Labor, Health and Human Services, Education, and Related Agencies

Committee on Appropriations

U.S. House of Representatives

Dr. Dave Pyburn

Vice President of Science and Technology

National Pork Board

1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634

Cell: (b) (6)

Fax: 515-309-5715

Email: DPyburn@pork.org

From: [Dave Pyburn](#)
To: [Jarrod Sutton](#); [NPB Senior Leadership Team](#); [Brett Kaysen](#); [Angie Krieger](#)
Subject: Re: Scheduled call
Date: Tuesday, November 27, 2018 2:08:53 PM

Yes. I am going

Sent from my Verizon, Samsung Galaxy smartphone

----- Original message -----

From: Jarrod Sutton <jsutton@pork.org>
Date: 11/27/18 12:38 PM (GMT-06:00)
To: NPB Senior Leadership Team <NPBSeniorLeadershipTeam@pork.org>, Brett Kaysen <BKaysen@pork.org>, Angie Krieger <AKrieger@pork.org>
Subject: Fwd: Scheduled call

Pyburn - you are confirmed to attend, yes?

Sent from my iPhone

Begin forwarded message:

From: Jonathan Kilby-Phillips <sponsor@hansonwade.com>
Date: November 27, 2018 at 1:32:00 PM EST
To: jsutton@pork.org
Subject: Scheduled call
Reply-To: sponsor@hansonwade.com

Hi Jarrod,

I wanted to schedule a quick call with you as Mark Post of **Mosa Meat**, Brian Spears of **New Age Meats**, Lou Cooperhouse of **BlueNalu**, Eitan Fischer of **Mission Barns** and many others have already registered to attend the [Industrializing Cell-Based Meats Summit](#) (February 5-7, San Francisco, CA)

Aware of your work in the cellular agricultural space and the value your solution is bringing to the community; we believe you'd make a great addition to the meeting.

Click here to view the [Event Guide](#).

With an expected participation of **70+ attendees** for the two-day conference, sponsorship opportunities are limited. To maximize the likelihood of being a part of the *Industrializing Cell-Based Meats Summit*, get in touch asap.

Let me know when you're free for a [quick 5-minute call](#) and we can discuss your involvement.

I look forward to hearing from you.

Thank you in advance.
Jonathan

Jonathan Kilby-Phillips
Commercial Director
Hanson Wade



www.industrializingcellbasedmeats.com

Should you no longer wish to receive emails sent to jsutton@pork.org from [Hanson Wade](#) about this or other events please [Click Here](#)
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From: [Dave Pyburn](#)
To: [NPB Senior Leadership Team](#); [Chris Hostetler](#); [Adria Huseeth](#); [Allan Stokes](#); [Steve Larsen](#); [Laura Bachmeier](#)
Subject: Lab Meat
Date: Tuesday, February 20, 2018 7:56:18 PM

“And while it’s easy to imagine how lab-grown meat would be better for the planet, there’s actually little data to back that up.”

“But one of the few studies that has been done on the subject found that you’d actually end up using [more energy to produce clean meat](#) than you would raising cows. After all, this is essentially a new wave of industrialization, which means you’ve got to keep the lights on. Another study, though, found clean meat would [come out on top](#).”

“A petri dish can't provide manure and it can't pull a plow and it doesn't provide a source of banking and trade for those people,” says Van Eenennaam. “I don't know that it's going to have a huge impact in the developing world, where most of the demand for milk and meat is projected to happen in the next 20 years.”

“We are super, super far away from whole-muscle meat,” says Bouzari. “And we are blindingly far away from whole-muscle meat of the same quality that you can find from animals that are allowed to move around and breathe and experience a diverse set of biological stimuli.”

“Will clean meat be perfect at first? Almost certainly not. But hey, that’s what condiments are for.”

<https://www.wired.com/story/lab-grown-meat/>

Dr. Dave Pyburn
Vice President of Science and Technology
National Pork Board
1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634
Cell: (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

Please conserve our natural resources, think twice before you print this e-mail.

From: [Rhea Schirm](#)
To: [Niall Dunne](#)
Subject: RE: Deadline: ICBM Summit - Early Registration
Date: Thursday, October 25, 2018 3:54:00 PM
Attachments: [image001.png](#)

Please verify I think Dave Pyburn is already signed up and that is who will be attending this meeting.
Thank you

Rhea Schirm

National Pork Board

Administrative Assistant , Science & Technology

RSchirm@pork.org

1776 NW 114th St

Clive, IA 50325

Phone: 515-223-2773

From: Niall Dunne <Niall.Dunne@hansonwade.com>
Sent: Thursday, October 18, 2018 12:52 PM
To: Rhea Schirm <rschirm@pork.org>
Subject: Deadline: ICBM Summit - Early Registration

Hi Rhea,

Just a quick reminder that our early registration deadline expires this Friday, saving you up to \$700.

[Register now to secure your place.](#)

Kind regards,
Niall

Niall Dunne
Delegate Acquisition Executive
hansonwade

52 Grosvenor Gardens | London | SW1W 0AU
T: +44 (0) 203 8627 315



Please conserve our natural resources, think twice before you print this e-mail.

From: [Food & Drink NPD & Innovation Summit](#)
To: [Intern](#)
Subject: Complimentary Delegate Pass to the Food & Drink NPD & Innovation
Date: Friday, September 28, 2018 12:29:49 PM

Hi,

I would like to offer you complimentary delegate passes to the 3rd Annual [Food and Drink Research, Innovation & NPD Summit](#) which is a conference and exhibition focused on researching, developing and launching new products and brands in the food and beverage industry. The event is being held on Oct 2nd in the Ricoh Arena, Coventry.

The event is part of the [Food & Drink Business Conference & Expo](#). That event is made up of over 10 different events below. In total 2000 delegates, 200 exhibitors and 250 speakers will attend the one-day event. Delegates are free to move between events.

[Sustainable Food and Beverage Conference](#)
[Food & Drink Lean, Productivity and Continuous Improvement Summit](#)
[The Food & Drink Engineering Summit](#)
[Food & Drink Data and IT Summit](#)
[Food & Drink Quality and Safety Summit](#)
[Food & Drink NPD and Innovation Summit](#)
[Food & Drink Supply Chain and Logistics Summit](#)
[Food & Drink Packaging Materials, Technology and Design Summit](#)
[The Foodservice & Hospitality Expo](#)
[The Food Retail Expo](#)
[The Food & Drink Skills, Training and Careers Show](#)

To attend any of the events simply register on the website that interests you. Feel free to pass on the invitation to colleagues, clients etc.

If you can't make this event, you can see our other free to attend events in the UK and Ireland covering sectors such as sustainability, food, retail, manufacturing, construction and property, research and innovation, Technology, Sales and Marketing, Online Business [here](#) . To attend any of the events simply register on sites.

Key Topics Include:

Understand the latest food trends and opportunities, Taste/Health Balance, Consumer engagement in NPD, Avoiding regulatory pitfalls, Clean label, emerging ingredients, latest health trends, shelf life extension , Production of alternative food substitutes(in vitro meat, algae, insects etc), achieving health claims approval, Nutritional labelling, sustainable ingredient sourcing, nutraceuticals, Functional ingredients, Store Shelf Innovation, clinical trial implementation, data analysis, recipe formulation, salt, sugar and fat reduction, natural ingredients, free from, taste enhancement, consumer trends, cost saving reformation, regulations, calorie reduction, future foods, quality assurance, Innovative R&D processes, from concept to launch, research methodology, Flavour Enhancement, retailer trends, product diversification and Much More ...

We look forward to seeing you on the day

To Exhibit, Sponsor or speak at the event please email John Bent at info@foodbevinnovation.com or on [+353 16120880](tel:+35316120880)

Regards,

John Bent
www.foodbevinnovation.com

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Please conserve our natural resources, think twice before you print this e-mail.

From: [Food & Drink NPD and Innovation Summit](#)
To: [Intern](#)
Subject: Complimentary Ticket to the Food & Drink Research, Innovation and New Product Development Summit
Date: Wednesday, June 21, 2017 12:39:54 PM

Hi there,

I would like to offer you complimentary delegate passes to the 2nd Annual [Food and Drink Research, Innovation & NPD Summit](#) which is a conference and exhibition focused on researching, developing and launching new products and brands in the food and beverage industry. The event is being held on Nov 7th in the Ricoh Arena, Coventry.

The event is also collocated with these other Food and Beverage events. In total 2000 delegates, 200 exhibitors and 250 speakers will attend the one-day event. Delegates are free to move between events.

[Sustainable Food and Beverage Conference](#)
[Food & Drink Lean, Productivity and Continuous Improvement Summit](#)
[The Food & Drink Engineering Summit](#)
[Food & Drink Data and IT Summit](#)
[Food & Drink Quality and Safety Summit](#)
[Food & Drink NPD and Innovation Summit](#)
[Food & Drink Supply Chain and Logistics Summit](#)
[Food & Drink Packaging Materials, Technology and Design Summit](#)

To attend any of the events simply register on the website that interests you. Feel free to pass on the invitation to colleagues, clients etc.

If you can't make this event, you can also see our other free to attend events in the UK and Ireland covering sectors such as sustainability, food, retail, manufacturing, construction and property, research and innovation, Technology, Sales and Marketing, Online Business [here](#) . To attend any of the events simply register on the sites

To Exhibit, Sponsor or speak at the event please email John Bent at info@foodbevinnovation.com or call on +353 16120880

The Food and Drink Research, Innovation and NPD Summit will bring together 1000+ senior executives and management from the leading food and beverage manufactures, retailers and foodservice companies that are responsible for R&D, Innovation, NPD, quality, health and Nutrition, Ingredients, brand management and marketing, technical, cost reduction, reformulation, commercialisation, consumer insights etc, as well as leading suppliers of technologies and services.

The 50+ speaker line up is drawn from senior management from leading food and beverage companies that have responsibility for areas such as NPD, R&D, Innovation, Brand Management & marketing, lab management, regulatory, nutrition, compliance, quality, nutrition, Ingredients, commercialisation, consumer insights etc.

There is also an exhibition at the event where 50+ exhibitors will be on hand to offer their

expertise and demonstrate their cutting edge technology, equipment and services.

Key Topics Include:

Understand the latest food trends and opportunities, Taste/Health Balance, Consumer engagement in NPD, Avoiding regulatory pitfalls, Clean label, emerging ingredients, latest health trends, shelf life extension , Production of alternative food substitutes(in vitro meat, algae, insects etc), achieving health claims approval, Nutritional labelling, sustainable ingredient sourcing, nutraceuticals, Functional ingredients, Store Shelf Innovation, clinical trial implementation, data analysis, recipe formulation, salt, sugar and fat reduction, natural ingredients, free from, taste enhancement, consumer trends, cost saving reformation, regulations, calorie reduction, future foods, quality assurance, Innovative R&D processes, from concept to launch, research methodology, Flavour Enhancement, retailer trends, product diversification and Much More ...

We look forward to seeing you on the day

To Exhibit, Sponsor or speak at the event please email John Bent at info@foodbevinnovation.com or on [+353 16120880](tel:+35316120880)

Regards,

John Bent

www.foodbevinnovation.com

[+353 16120880](tel:+35316120880)

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Please conserve our natural resources, think twice before you print this e-mail.

From: [Chris Hostetler](#)
To: [Jolie Rika](#)
Subject: RE: Merck meeting - information needed
Date: Friday, January 11, 2019 6:07:00 PM
Attachments: [image001.png](#)

Perfect! Thank you for checking.

Best regards,

Chris Hostetler

Chris Hostetler, PhD, PAS
Director of Animal Science
National Pork Board
O: (515) 223-2606
M: (b) (6)

From: Jolie, Rika <rika.jolie@merck.com>
Sent: Friday, January 11, 2019 5:06 PM
To: Chris Hostetler <chostetler@pork.org>
Subject: RE: Merck meeting - information needed

Chris,

Your assistant should have information.

Regards
Rika

From: Chris Hostetler <chostetler@pork.org>
Sent: Thursday, January 10, 2019 6:54 PM
To: Jolie, Rika <rika.jolie@merck.com>
Subject: RE: Merck meeting - information needed

EXTERNAL EMAIL – Use caution with any links or file attachments.

Hello Rika,

I am looking forward to this opportunity. Attached please find my biosketch and a head shot. Use them as you see fit.

I do not have any questions about the presentation. I've been calling it "Disruptive Technologies Facing Animal Agriculture". There are certainly a lot of them but the four that I discuss are gene, editing, cultured "meat", big data/IOT, monitoring of animals and their environment. Quite honestly, I do not have much of a presentation that goes along with it, but rather strive to lead a dynamic discussion through questions and answers. I done this talk several times to a variety of audiences and sizes of audiences and it has been well-received.

I recently heard of the accusation you mentioned. It will certainly be interesting where that leads Merck in the next few years.

Finally, I have not yet received any information about my travel arrangements. It is possible that this is because that information has gone directly to my administrative assistant, but I feel like she would mention it to me. I am typically not a nervous traveler but in this case I will be returning from a trip on the same day that I leave for your meeting. If you wouldn't mind checking those arrangements for me, I would appreciate it.

Best regards,

Chris Hostetler

Chris Hostetler, PhD, PAS
Director of Animal Science

National Pork Board

O: (515) 223-2606

M: (b) (6)

From: Jolie, Rika <rika.jolie@merck.com>
Sent: Thursday, January 10, 2019 10:17 AM
To: Chris Hostetler <chostetler@pork.org>
Subject: Merck meeting - information needed
Importance: High

Chris,

As the Merck meeting is approaching rather quickly, I am contacting you because we would like to have a photo as well as a brief bio. In addition, I wanted to ask if you have any questions with respect to your presentation. Lastly, as it fit with your topic, I like to inform you that we announced acquisition of Antelq at the end of last year (you may have read about this) - <https://www.beefcentral.com/news/agribusiness-merck-buys-allflex-parent-company-antelq-for-a4-8b/>

Lastly, can you provide the title of your presentation?

Looking forward meeting you.

Regards

Rika

wf

Rika Jolie
Head of Global Swine

Merck Animal Health
2 Giralda Farms
Madison, NJ 07940

Ph +1 (816) 982 6632



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Dr. Chris Hostetler is the National Pork Board's Director of Animal Science. He oversees research in swine reproduction, nutrition and genetics as well as managing emerging issues as they develop. Prior to joining the National Pork Board in 2011, Dr. Hostetler was on faculty at South Dakota State University where he taught animal nutrition and conducted research in monogastric nutrition.

Dr. Hostetler was raised on a farm in northern Indiana. He received his Bachelor of Science at Purdue University, his Master of Science at the University of Florida and his PhD at Washington State University. While at Washington State University he also managed the University's research and teaching swine farm, served as an instructor in the College of Sciences and conducted a postdoctoral study in reproductive biology.

Dr. Hostetler can be reached at CHostetler@pork.org or (515)223-2606.

From: [Bill Even](#)
To: [Dave Pyburn](#)
Subject: Re: The future of protein?
Date: Tuesday, October 23, 2018 6:48:23 PM

Support

On Oct 23, 2018, at 3:39 PM, Dave Pyburn <dpyburn@pork.org> wrote:

I never did hear back from you on this.

Are you wanting someone to attend this? Registration would be \$200 if done before 11/15. I need to be at the Utah State Assoc. meeting at 8 AM on the 18th so I could go for just the 16th and then head on to Utah on the 17th.

Dr. Dave Pyburn
Vice President of Science and Technology
National Pork Board
1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634
Cell (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

From: Dave Pyburn
Sent: Monday, October 15, 2018 2:06 PM
To: Bill Even <beven@pork.org>; John Johnson <johnjohnson@pork.org>
Subject: RE: The future of protein?

The front end of it is about how to fund raise and the back end is about going after venture capital. The middle day looks mildly interesting:

**Wednesday
January 16th**

8:00 - 9:00

Opening Remarks

Bruce Friedrich, Executive Director of The Good Food Institute

9:00 - 6:00

Upper Level: "Deep Dive" Sessions

On the upper level, join any one of the many sessions dedicated to deep-dives into various areas of business, science & industry.

Jack A. Bobo on shifting consumer preferences and how they affect the protein

market

Alwyn Severien of **Algama** on the possibilities of microalgae protein and scaffolding

Sandhya Sriram of **Shiok Meats** dives deep into APAC attitudes towards protein

Marcus Curl of **InVitria** “clean meat needs clean media”

Brian Spears of **New Age Meats** on the hidden secrets of successful automation.

... And many more. To submit a deep dive proposal, [contact us](#).

Are you wanting someone to attend this? Registration would be \$200 if done before 11/15. I need to be at the Utah State Assoc. meeting at 8 AM on the 18th so I could go for just the 16th and then head on to Utah on the 17th.

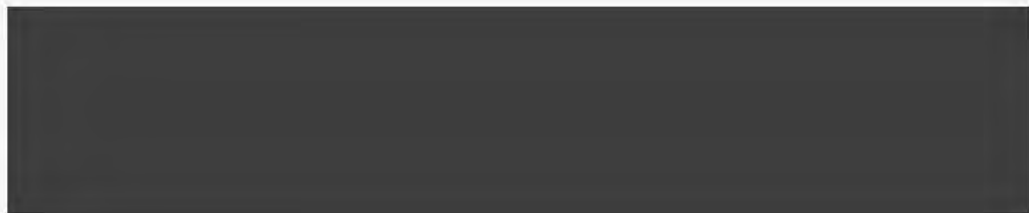
Dr. Dave Pyburn
Vice President of Science and Technology
National Pork Board
1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634
Cell: (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

From: Bill Even
Sent: Sunday, October 14, 2018 4:24 PM
To: Dave Pyburn <dpyburn@pork.org>; John Johnson <johnjohnson@pork.org>
Subject: Fwd: The future of protein?

Begin forwarded message:

From: Olivia Fox Cabane <Olivia@innovation.fyi>
Date: October 14, 2018 at 3:59:45 PM CDT
To: Bill <beven@pork.org>
Subject: The future of protein?
Reply-To: <us19-ff695b3774-f3c18ff7d4@conversation01.mailchimpapp.com>





The New Protein Landscape: click the image above for a full-size version

Announcing

The Alternative Protein Show

January 15 - 17 2019 in San Francisco

- **When:** January 15-17 in San Francisco
- **Where:** Terra Gallery & Event Venue
- **Who:** The entire alt-protein ecosystem is attending, from startups and ingredient companies to multinational companies' venture arms or VCs interested in the future of protein.

- **What:** A pre-event workshop, a full day expo including “deep dive” sessions into science & industry topics, evening reception and a post-event VC day.
- **Why:** Because our current food system is unsustainable: it’s destroying the environment and will not be able to meet future demand. How can we feed nine billion people enough protein in a way which is affordable, healthy and good for the environment?

and

The International Alliance for Alternative Protein (IAAP)

Interested in the future of protein?

You’ll find more information and resources at altprotein.org, and you’ll get regular updates from this newsletter.

Not interested in the future of protein?

[UNSUBSCRIBE HERE](#). We’ll never contact you again.

[Add us to your address book](#)

From: [Cindy Cunningham](#)
To: [Lynn Grooms](#)
Subject: RE: Interview request re: MidWest Thrive
Date: Friday, November 30, 2018 3:32:00 PM

Lynn—I will connect you with one of our meat team for the second interview. Will you be here in DSM, or phone interviews?

Cindy

Cindy Cunningham
Assistant Vice President of Communications
National Pork Board
ccunningham@pork.org
515-223-2600 office
(b) (6) cell

From: Lynn Grooms <LGrooms@madison.com>
Sent: Friday, November 30, 2018 11:56 AM
To: Cindy Cunningham <ccunningham@pork.org>
Subject: RE: Interview request re: MidWest Thrive

Cindy,

Yes, I'd like to do the interview in February. Since I'm requesting, I thought I'd put in another request! I'd also like to interview Bill Even or another one of your colleagues about plant-based and cell-cultured meat and your organization's position on those products, implications for the pork industry, etc. I'm wondering if I could do the interviews at the same time in February. Thanks!

Lynn Grooms / Southern Wisconsin Reporter
1901 Fish Hatchery Road • Madison, WI 53713
Office: 608-437-2827



From: Cindy Cunningham [<mailto:ccunningham@pork.org>]
Sent: Friday, November 30, 2018 11:38 AM
To: Lynn Grooms
Subject: RE: Interview request re: MidWest Thrive

Lynn—

Thanks for the email and phone call. Just double checking, but you are looking for an interview in February—correct? That is great, but we usually don't have that long of lead times, so I wanted to ensure I understood what you are seeking!

Thanks

Cindy

Cindy Cunningham
Assistant Vice President of Communications
National Pork Board
ccunningham@pork.org
515-223-2600 office
(b) (6) cell

From: Lynn Grooms <LGrooms@madison.com>
Sent: Friday, November 30, 2018 10:11 AM
To: Cindy Cunningham <ccunningham@pork.org>
Subject: Interview request re: MidWest Thrive

Cindy,

I wanted to follow up on my voice mail message. I understand that the Pork Checkoff is partnering with venture firm SVG Partners on MidWest THRIVE, a new accelerator program to foster animal-health startup companies. I'm hoping that you could help me schedule a phone interview with Bill Even or another appropriate contact to discuss how and why your organization is involved, how such startups can help the pork-production industry, etc.

I'm working far in advance to set up interviews. If possible, I'd like to schedule a phone interview sometime in early February. Could you please let me know who I could talk to at the Pork Checkoff and if we could get an interview on the calendar? Thank you!

Best Regards, Lynn Grooms / Southern Wisconsin Reporter
1901 Fish Hatchery Road • Madison, WI 53713
Office: 608-437-2827



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From: [Dave Pyburn](#)
To: [John Johnson](#); [NPB Senior Leadership Team](#)
Subject: RE: Tyson Foods invests in cultured meat specialist
Date: Wednesday, July 18, 2018 7:34:00 AM

Couple of key points:

Future Meat Technologies is now **the only company** that can produce this fat, without harvesting animals and without any genetic modification.

Cultured meat production **may** also be eco-friendlier than traditional meat production. "We want to feed the world while protecting the environment," noted Kshuk.

Dr. Dave Pyburn
Vice President of Science and Technology
National Pork Board
1776 NW 114th St., Clive, IA 50325

Phone: 515-223-2634
Cell: (b) (6)
Fax: 515-309-5715
Email: DPyburn@pork.org

From: John Johnson
Sent: Wednesday, July 18, 2018 5:35 AM
To: NPB Senior Leadership Team <NPBSeniorLeadershipTeam@pork.org>
Subject: Tyson Foods invests in cultured meat specialist

Another investment by Tyson

<http://www.fdin.org.uk/2018/07/tyson-foods-invests-in-cultured-meat-specialist/>

John A. Johnson
Chief Operating Officer
National Pork Board
1776 NW 114th Street
Clive, IA 50325

Office Phone: 515-223-2765
Cell Phone: (b) (6)

Please conserve our natural resources, think twice before you print this e-mail.

From: [Ellen-Margrethe Hovland](#)
To: [Fiona Greig](#)
Cc: [Hanne Castenschiold](#); "[CLITRAVI](#)"; "[Veronique Droulez](#)"; [Adria Huseth](#); "[Andrew Milkowski](#)"; "[Prof Hettie Schonfeldt](#)"; [Puk Maia Ingemann Holm](#); "[Shalene McNeill](#)"; "[Susan Backus](#)"; "[Teresa Brophy](#)"; "[Trine Thorkildsen](#)"; "[Kate Spinello](#)"; "[Christelle Duchene](#)"; "[Claire Chambrier](#)"; "[Clara Lau](#)"; "[Heather Channon](#)"; "[Hsin Huang](#)"; "[Janet Riley](#)"; "[Jennifer Robertson](#)"; "[Joyce Parslow](#)"; "[Mary Ann Binnie](#)"; "[Maureen Strong](#)"; "[Nicolai Worm](#)"; [Phil Lofgren](#)
Subject: SV: speaker on synthetic meat
Date: Tuesday, June 27, 2017 5:59:50 AM

Hi Fiona,

Memphis Meat is another option. They gave a presentation at EAT Food Forum in Stockholm lately. The presentation can be seen her

<http://eatforum.org/article/the-opposite-of-a-slaughterhouse/>

Maybe this article might be of interest? It contains some background information of funding and how the three companies at the clean meat marked are connected to each other:

<http://labiotech.eu/interview-mark-post-cultured-meat/>

Good luck with your conference!

Best wishes,
Ellen

Fra: Hanne Castenschiold [mailto:Hca@lf.dk]

Sendt: mandag 26. juni 2017 11:01

Til: 'CLITRAVI' <info@clitravi.eu>; Fiona Greig <fionag@beeflambnz.co.nz>; 'Veronique Droulez' <vdroulez@mla.com.au>; 'Adria Huseth' <ahuseth@pork.org>; 'Andrew Milkowski' <amilkowski@charter.net>; 'Christelle Duchene' <c.duchene@civ-viande.org>; 'Claire Chambrier' <c.chambrier@interbev.fr>; 'Clara Lau' <clau@beef.org>; Ellen-Margrethe Hovland <ellen.hovland@animalia.no>; 'Heather Channon' <heather.channon@australianpork.com.au>; 'Hsin Huang' <hsin.huang@meat-ims.org>; 'Janet Riley' <jriley@meatinstitute.org>; 'Jennifer Robertson' <jrobertson@qmscotland.co.uk>; 'Joyce Parslow' <jparslow@canadabeef.ca>; 'Mary Ann Binnie' <binnie@cpc-ccp.com>; 'Maureen Strong' <maureen.strong@ahdb.org.uk>; 'Nicolai Worm' <nicolai.worm@t-online.de>; 'Phil Lofgren' (b) (6) >; 'Prof Hettie Schonfeldt' (b) (6) >; Puk Maia Ingemann Holm <PMIH@lf.dk>; 'Shalene McNeill' <smcneill@beef.org>; 'Susan Backus' <sbackus@meatinstitute.org>; 'Teresa Brophy' <teresa.brophy@bordbia.ie>; 'Trine Thorkildsen' <trine.thorkildsen@matprat.no>; 'Kate Spinello' <kspinello@beef.org>

Emne: SV: speaker on synthetic meat

Mark Post is a good suggestion – I have heard him here in Denmark.

Venlig hilsen

Hanne Castenschiold
Handel, Marked & Ernæring

T +45 3339 4465 | M + (b) (6) | E hca@lf.dk

Fra: CLITRAVI [<mailto:info@clitravi.eu>]

Sendt: 26. juni 2017 10:00

Til: Fiona Greig; 'Veronique Droulez'; 'Adria Huseeth'; 'Andrew Milkowski'; 'Christelle Duchene'; 'Claire Chambrier'; 'Clara Lau'; 'Ellen-Margrethe Hovland'; Hanne Castenschiold; 'Heather Channon'; 'Hsin Huang'; 'Janet Riley'; 'Jennifer Robertson'; 'Joyce Parslow'; 'Mary Ann Binnie'; 'Maureen Strong'; 'Nicolai Worm'; 'Phil Lofgren'; 'Prof Hettie Schonfeldt'; Puk Maia Ingemann Holm; 'Shalene McNeill'; 'Susan Backus'; 'Teresa Brophy'; 'Trine Thorkildsen'; 'Kate Spinello'

Emne: speaker on synthetic meat

Dear Fiona,

You could try perhaps with

Mark Post, MD, PhD

Professor and Chair of Physiology

Maastricht University

Department of Physiology

Universiteitssingel 50

6229 ER, Maastricht, The Netherlands

T: +31 433881200

F: +31 433884166

M: (b) (6)

E-mail address of his secretary dealing with Mark's agenda =

nadia@laurinci.com

kind regards,

Dirk Dobbelaere and Paolo Patruno



Boulevard Baudouin 18 (Bte 4)
B-1000 Brussels
Tel: + 32 2 203 51 41
E-mail: info@clitravi.eu

Van: Fiona Greig [<mailto:fionag@beeflambnz.co.nz>]

Verzonden: maandag 26 juni 2017 3:50

Aan: 'Veronique Droulez' <vdroulez@mla.com.au>; 'Adria Huseeth' <ahuseeth@pork.org>; 'Andrew Milkowski' <amilkowski@charter.net>; 'Christelle Duchene' <c.duchene@civ-viande.org>; 'Claire Chambrier' <c.chambrier@interbev.fr>; 'Clara Lau' <clau@beef.org>; 'Ellen-Margrethe Hovland' <ellen.hovland@animalia.no>; 'Hanne Castenschiold' <hca@lf.dk>; 'Heather Channon' <heather.channon@australianpork.com.au>; 'Hsin Huang' <hsin.huang@meat-ims.org>; 'Janet Riley' <jriley@meatinstitute.org>; 'Jennifer Robertson' <jrobertson@gmscotland.co.uk>; 'Joyce Parslow' <jparslow@canadabeef.ca>; 'Mary Ann Binnie' <binnie@cpc-ccp.com>; 'Maureen Strong' <maureen.strong@ahdb.org.uk>; 'Nicolai Worm' <nicolai.worm@t-online.de>; CLITRAVI <info@clitravi.eu>; 'Phil Lofgren' (b) (6) >; 'Prof Hettie Schonfeldt' (b) (6) >; 'Puk Holm' <pmih@lf.dk>; 'Shalene McNeill' <smcneill@beef.org>; 'Susan Backus' <sbackus@meatinstitute.org>; 'Teresa Brophy' <teresa.brophy@bordbia.ie>; 'Trine Thorkildsen' <trine.thorkildsen@matprat.no>; 'Kate Spinello' <kspinello@beef.org>

Onderwerp: Seeking speaker on synthetic meat

Hi all

I am currently scoping to find an appropriate speaker on the topic of synthetic foods/meat to present at the New Zealand Red Meat Sector conference at the end of July, which is attended by leaders of the NZ meat industry from gate to plate.

Ideally, this person would be well across what's available on the current market, as well as a forecasting strategic thinker to aid conference attendees in their understanding of the products, the market they represent, threats and opportunities to prepare for what is to come in the short and

long term future

Raymond McCauley was lined up, but his speaker fees are very high <https://su.org/faculty-speakers/raymond-mccauley/>

Any suggestions welcome

Warmest regards,

**FIONA GREIG BSc Registered Nutritionist | Nutrition Manager
BEEF + LAMB NEW ZEALAND INC**

Ground Floor, Air New Zealand Building, Smales Farm Park
Cnr Taharoto and Northcote Roads, Takapuna, Auckland
M (b) (6) | www.recipes.co.nz

We are loving our [Mediterranean Beef with Gremolata](#) recipe this winter!
[Click here](#) for the recipe.



Please conserve our natural resources, think twice before you print this e-mail.

From: [Jonathan Kilby-Phillips](#)
To: [Jarrod Sutton](#)
Subject: Welcome to the Future of Meat: The Industrializing Cell-Based Meat Summit 2019
Date: Wednesday, October 3, 2018 1:03:30 PM

Hi Jarrod,

I'm thrilled to be able to share with you the first glimpse of the 2019 [Industrializing Cell-Based Meat Summit](#).

The cellular agriculture industry is actively seeking partners that can deliver cost effective cell media alternatives and growth factors: bioreactors that can produce at the scale required for commercialization as well as 3D tissue.

You can take a look at the newly released [Full Event Guide here](#).

Confirmed speakers include:

- Didier Toubia, CEO, **Aleph Farms**
- Rom Kshuk, CEO, **Future Meat Technologies**
- Benjamina Bollag, CEO, **Higher Steaks**
- Mark Post, CSO, **Mosa Meat**
- Yuki Hanyu, CEO, **Integriculture Inc.**
- Michael Selden, CEO, **Finless Foods**
- Lou Cooperhouse, CEO, **BlueNalu**

This exploding industry is starting to become a commercial reality but with many logistical and operational challenges. This is why the industry needs your help to accelerate their products to market.

So if you're interested in engaging this audience and profiling your services alongside such a start-studded line up, [get in touch today](#).

Best regards,
Jonathan

Jonathan Kilby-Phillips
Commercial Director
Hanson Wade



www.industrializingcellbasedmeats.com

Should you no longer wish to receive emails sent to jsutton@pork.org from [Hanson Wade](#) about this or other events please [Click Here](#)
View our full [Privacy Policy](#).

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From: [Amanda Doerffel](#)
To: [Elaine Otte](#); [Randall Newton](#); [Neel Sahni](#); [Neal Hull](#); [Jim Murray](#)
Subject: Briefing Book - electronic version
Date: Monday, March 4, 2019 8:58:23 AM
Attachments: [NAMI Notebook.pdf](#)
[image001.png](#)

Here is the electronic version. I mailed them Tuesday of last week, but I heard some people didn't get them. Sorry about that!

Amanda Doerffel

Assistant, Domestic & International Marketing

National Pork Board

1776 NW 114th St.

Clive, IA 50325

515-223-2761

adoerffel@pork.org



Please conserve our natural resources, think twice before you print this e-mail.

**Annual Meat
Conference**
March 3-5, 2019



NAMI NORTH AMERICAN
MEAT INSTITUTE



© 2019 National Pork Board, Des Moines, IA USA. This message
funded by America's Pork Producers and the Pork Checkoff.

Never before has the Annual Meat Conference offered such a complete education and networking experience! In addition, there are close to five hours of exhibits showcasing the latest in new meat and poultry products and the products and services retailers need to increase their bottom line. Comprehensive education sessions include a variety of ways to explore the latest developments in meat retailing today. Gain tools, insights, inspiration and new ideas to differentiate your unique products and services, fortify your marketing ROI, increase sales and build customer loyalty.

The Annual Meat Conference aims to satisfy your appetite for learning and professional growth and opens the door to fresh ideas and new perspectives. Join your colleagues and hear the latest about consumer trends that can be readily applied to your business. The Annual Meat Conference exhibit hall is the place to find and showcase innovative new meat products and solutions. In 2018, we had more than 100 exhibiting companies showcasing their products and services to 1500 targeted attendees. This is only event dedicated to the retail segment of the meat and poultry industry.



AGENDA

Sunday, March 3	
Registration	10:00AM – 6:00PM
Women in Meat Retail Networking Lunch	11:30 – 12:30PM
Welcome and Opening Remarks	12:45PM – 1:00PM
Meat Matters: Perspectives from NAMI and FMI Leadership	1:00PM – 1:30PM
Keynote Address: The Great ReWrite Leonard Brody	1:30PM – 2:30PM
Break	2:30PM – 2:45PM
Concurrent Workshops Trends in Cooking Technology Regulatory Update Food Transparency Today	2:45PM – 3:45PM
Break	3:45PM – 4:00PM
General Session: The Power of Meat 2019	4:00PM – 5:15PM
Welcome Reception	5:15PM – 7:15PM
Monday, March 4	
Breakfast	7:00AM – 8:00AM
General Session: Market Outlook for Meat and Poultry	8:00AM – 9:45AM
Break	9:45AM – 10:15AM
Concurrent Workshops Transportation Social Media Now Meal Kits	10:15AM – 11:15AM
Break	11:15AM – 11:30AM
General Session: The Future of Artificial Intelligence in Retail	11:30AM – 12:30PM
Exhibit Hall Open (Includes lunch and reception on exhibit floor)	12:30PM – 5:00PM
Tuesday, March 5	
Breakfast	7:00AM – 8:00AM
Omni-channel to Enhance the Customer Experience	8:00AM – 9:00AM
Break	9:00AM – 9:15AM
Concurrent Workshops Alternative Meat Products Leaders of Tomorrow Panel Discussion Preparing the Meat Industry for a Waste-Free Future	9:15AM – 10:15AM
Break	10:15AM – 10:30AM
Closing General Session: Back to Governing in the Crosswinds	10:30AM – 11:30AM
AMC Planning Committee Debrief Meeting	12:00PM – 1:00PM

LOCATION

Hilton Anatole
2201 N Stemmons Fwy
Dallas, TX 75207
Phone: 214-748-1200

<https://www.hiltonanatolehotel.com>

The Hilton Anatole hotel is located on 45 acres just north of downtown Dallas, Texas' business district – three miles from Dallas Convention Center, 29 minutes from Dallas Ft Worth International Airport, and 10 minutes from Dallas Love Field Airport. The hotel property may be accessed from its bordering streets, 1-35E, Market Center Blvd and Wycliff Ave.

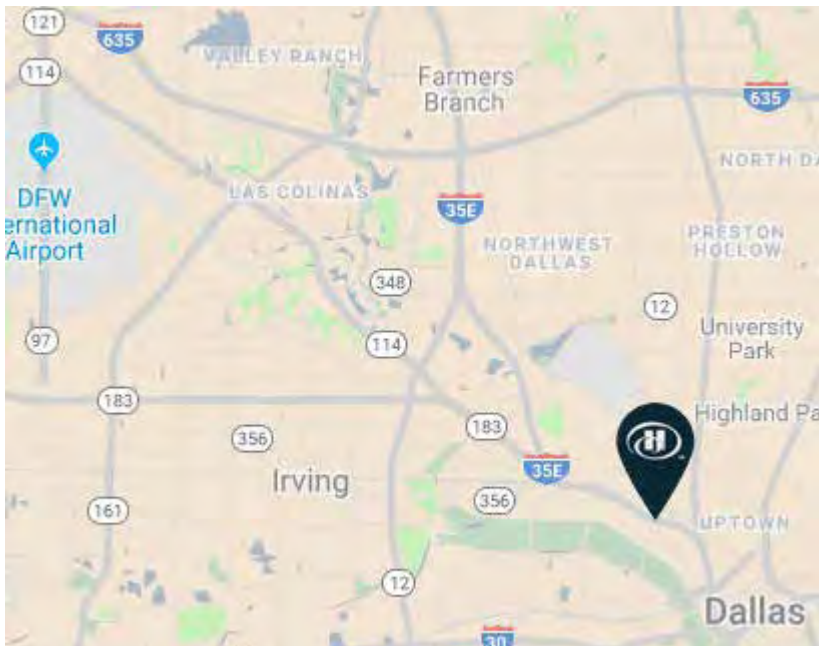
Directions from Dallas/Ft Worth International Airport

Take south airport exit (Hwy 183 East); merge with I-35E South. Go 4 miles, then exit Market Center Blvd. Hotel is on the right hand side. Distance from hotel: 14 miles, Drive time: 20 minutes

Airport Transportation

Uber Select: \$43-54

Taxi: \$42 first passenger, \$2 each additional passenger



COMPANIES EXHIBITING

Amazing Taste Foods, Inc.	Miller Poultry
American Foods Group, LLC	Milliken & Company
Aunt Bessie's Products	Montour Ltd.
Beef Checkoff-NAMI	Mountain States Rosen
Bilinski's Sausage	National Beef Packing Co., LLC
Bob Evans Farms	National Cattlemen's Beef Ass'n
Borgen Systems	Nature's Cut International LLC
Branding Iron	North Country Smokehouse
Brookwood Farms, Inc.	O&T Farms
BUBBA Foods, LLC	Organic Prairie
Cargill Protein	Ozark Mountain Poultry
Carl Buddig and Company	Panorama Meats
Carlson AirFlo	Pasqualichio Brothers Inc.
Cascades	Pederson's Natural Farms
Catelli Brothers, Inc.	Perdue/Coleman Natural Foods
Certified Angus Beef LLC	Pitman Farms
Certified Hereford Beef	Plumrose
Chef's Menu	Pre
Cibo Italia LLC	Premier Custom Foods
Clemens Food Group	Premier Proteins, LLC
Creekstone Farms	ProPortion Foods
Crescent Foods	Premium Beef LLC Randolph Packing
Culver Duck	Red Bird Farms
D'Artagnan	Sanderson Farms
Dietz & Watson, Inc.	Schweid & Sons
Dos Rios	Seaboard Foods
du Breton	Sealed Air Corp.
Everson Spice Company	Shenandoah Valley Organic
Excalibur Seasoning Co., Ltd	Smithfield Foods
FPL Food, LLC	Spartanburg Meat Processing Co. Inc.
Global Animal Partnership	Springer Mountain Farms
Golden West Food Group	Strauss Brands, Inc.
Grass Run Farms	Sugardale Foods
Grasselli-SSI	SunFed Ranch
Hain Pure Protein	Sunsweet Growers
Indiana Packers Corporation	Superior Farms
Instituto Nacional De Carnes (INAC) -Uruguay	Swaggerty's Farm

COMPANIES EXHIBITING (CONTINUED)

Intralix, Inc.	Teton Waters Ranch
Invatron	Teys USA
JBS/Pilgrims	The Brooklyn Hot Dog Company
Jensen Meat Company	The Lamb Co-Operative, Inc.
Johnsonville Sausage	Thomas Foods International USA
Kayem Foods, Inc.	Tosca
Kepak North America Corporation	TRIBALI Foods
kp Food & Consumer Products	Trusted Veal from Europe
Land O'Frost, Inc.	Tyson Foods
Longhini Sausage Co.	Urner Barry
Louis Foods, Inc.	Verde
Maple Leaf Farms, Inc.	Volk Enterprises
Marcho Farms	Where Food Comes From
Meyer Natural Foods	WS Packaging Group
Mighty Spark Food Co.	Yerecic Label

NATIONAL PORK BOARD SOCIAL MEDIA CHANNELS:

Consumer-Facing Food Channels:

Instagram: @NationalPorkBoard

Twitter: @NationalPork

Facebook: @NationalPorkBoard

YouTube: @NationalPorkBoard

#RealPigFarming Producer-Facing Channels:

Instagram: @RealPigFarming

Twitter: @RealPigFarming

Facebook: @RealPigFarming

YouTube: @RealPigFarming

Pork Checkoff Industry-Facing Channels:

Twitter: @PorkCheckoff

Facebook: @ThePorkCheckoff

YouTube: @PorkCheckoff

LinkedIn: <https://www.linkedin.com/company/national-pork-board/>



The National Pork Board launched Dinner At Home In America, the inaugural report from the Insight to Action research program. This first-in-the-category research uncovered nine unique dinner occasions that provide insight into how Americans are eating dinner at home.

Each dinner occasion represents a type of at-home dinner you may have throughout the week: a routine family dinner one day, followed by quick solo eating the next. On the following pages is a deeper dive into the nine at-home dinner occasions across America.

The Insight to Action research program gives our partners – pig farmers, packers, processors, retailers, foodservice professionals and other influencers – data – fueled insights to drive innovation that ultimately puts more pork on the dinner table. Today's changing habits are creating more opportunities than ever for pork, and we're providing new value to our members and partners by sharing data-driven understanding of today's changing dinner habits.

So what's next? National Pork Board will continue to share new insights. Most immediately in Q1, we'll dive deeper into each dinner occasion and the channel team will work with stakeholders with a focus on getting consumers to keep pork on-hand. Our next report will be an in-depth look at Hispanics and will be released later this year.

THE 9 DINNER OCCASIONS

FAMILIAR FAMILY DINNER 3+ DINERS



These families lead busy lives and rely on their known repertoire of easy, go-to favorites.

KEY NEEDS:

- Quick prep
- On-hand ingredients
- Family-friendly flavors

FAMILY, FLAVOR, FUN 4+ DINERS



This group is looking for a flavorful experience to accommodate everyone, and is open to trying something new.

KEY NEEDS:

- Large group dining
- Flavorful, indulgent and fun

QUICK, HEALTHY ADULT MEALS 1-3 DINERS



These urban or suburban women want something healthy after work that requires little to no prep.

KEY NEEDS:

- Fast, but healthy
- Little prep or planning

ELEVATED FRIDGE SURFING 2-3 DINERS



These baby boomers and women are looking for a fun weeknight dinner, and aren't in a huge hurry to get one.

KEY NEEDS:

- Tasty, go-to weeknight meal
- Non-rushed

HEALTHY FAMILY FAVORITE 3+ DINERS



These families want to celebrate a special occasion in style by cooking a hearty, yet healthy meal everyone will enjoy.

KEY NEEDS:

- Healthy
 - Special occasion, but not fancy
 - Family requested dish
-

FEEDING FAMILIES IN A HURRY 4+ DINERS



These younger families are in a rush to get dinner on the table, and want an easy to prepare, crowd-pleasing solution.

KEY NEEDS:

- Convenience
- Satisfy cravings

CONVENIENT EATING FOR ONE 1 DINER



These young solo diners are merely looking for a meal that's easy to make, regardless of nutrition.

KEY NEEDS:

- Easy
- On-hand
- Quick prep and clean up

SOLO CRAVINGS 1 DINER



These millennial or Gen X men want what they want – an easy, quick, budget-friendly meal that will satisfy a craving.

KEY NEEDS:

- Speed
- Minimal effort
- Satisfies a craving

EXPLORING NEW FLAVORS 4+ DINERS



These groups are eager for something new, especially on the weekend when they have time to test a recipe.

KEY NEEDS:

- New recipe or flavor
- Skews healthier

These nine occasions account for 89% of all dinner occasions. The remaining responses did not result in statistically significant segments.



TARGET LIST

Contacts that you would like to make while in Dallas, TX can be listed here.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

ATTENDEE LIST

Acosta

John Scully	Senior Business Manager
-------------	-------------------------

Action Food Sales, Inc.

Preston Harrell	Sales Executive
Mike Hughes	Account Executive
Mike Mickie	Account Executive
John Nilsson	Vice President of Sales & Operations
John Nilsson	President

Adams Fairacre Farms, Inc.

Frederick Brill	Meat Director
Robert DeWitt	Meat Manager

Advantage Report USA

Melanie Towle	Sr. Manager, Client Services USA
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Advantage Solutions Fresh

Larry Ritzert	Business Manager
Jim Baird	Sales Manager
Victor Bontomasi	Director of Sales, Midwest
Mark Clausen	Area Vice President
Bruce Flanigan	Senior Director of Sales, California
Craig Gervers	Sales Manager
Darwin Gore	Business Development Manager
Bob Gradwohl	Director, Sales (Arizona)
Steve Jewasko	General Manager
Michael Kinney	Director of Sales
Dave Leon	Area Vice President Advantage Action
Brian McNutt	Sales Manager
Craig Miller	Division Vice President
Dennis Parks	Director
Kyle Pierce	Sales Manager
John Prinzi	Director, Sales
Rob Rouse	Business Development Manager
Tom Slagle	Sales Manager
Jenna Templin	Director of Sales, Kroger Fresh
Robert Wach	Brand Development Manager
Jeff White	Area Vice President

Affiliated Foods, Inc.

Russell Fontenot	Director of Meat Operations
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Affinity Group Infusion

Shane Coughlin	Executive VP & General Manager
Michael Sonberg	Executive VP & General Manager New England

Agri Beef Co.

Dave Murphy	Associate
Terry Reynolds	Executive Director, Sales
Jay Theiler	VP, Brand Development

Ahold Delhaize USA

Scott Grove	Category Manager
William Puza	Category Manager, Beef, Lamb and Veal
Michael Watts	Category Manager, Beef, Veal and Lamb

Albertsons Companies

Alexa Langona	Product Manager
John Beretta	Group Vice President, Meat and Seafood
Marc Brasier	Vice President, Meat Supply Chain Management
Scott Chelf	Dir. of Corporate Procurement: Meat, Seafood & Deli
Cathy East	VP Procurement, Meat, Seafood & Deli

Mike Miller	Manager of Commodity Analysis, Meat, Seafood & Deli
Demetri Pantazes	Vice President, Sales, Meat & Seafood
Nancy Rathje	Quality Assurance Manager, Meat & Seafood
Tod Seiling	Retailer
Anthony Snow	Seafood Director

ALDI Inc.

Scott Gerbec	Director, Corporate Buying
Brian Trusheim	Director, Corporate Buying
Shane Williams	Group Director

Allegiance Retail Services, LLC (Foodtown)

Samer Rahman	Senior Director, Meat and Seafood
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Amazing Taste Foods, Inc.

Joyce Johnson	Customer Service Specialist
Steven Lopez	Director, Customer Support
Steven Lopez	Field Sales Representative
Jeff Parker	Executive Chef
Alfredo Ramirez	Director of Sales
Olya Savtchenko	Director of Finance
Adam Taki	President
Ghazi Taki	Chairman

American Foods Group, LLC

Kevin Butler	Vice President, Ground Beef Sales
Roger Dahlman	Ground Beef Sales
Vince DeGrado	Vice President, Technical Services
Jennifer Dibbern	Marketing Manager
Steven Giroux	Vice President, Sales and Marketing
Rick Heatherington	Director of Perishables Price Cutter Group
Chad Heinecke	Senior Product Manager
Jeff Jones	Executive Vice President, Sales
Ashley Lembke	Director of Food Safety/QA
Billy McPherson	Group Vice President, Sales and Marketing
Wade Morgan	Sales
John Pair	Director, National Accounts, East
John Schneider	Central Region Sales Manager
Jim Slater	National Account Manager
Scott Strasinger	Manager, Supply Chain
Gregg Sylvester	Regional Manager, Mid-Atlantic
Kurt Termansen	Director, Retail Sales
Mark Winter	Vice President of Boxed Beef Sales

American Humane Farm Program - Humane Heartland

Marty Frankhouser	National Director, Farm Program
Haley Grimes	Field Operations Manager, Farm Program
Jack Hubbard	Chief Marketing Officer & VP, Communications

American Lamb Board

Rae Maestas	Program Manager
Megan Wortman	Executive Director

Animal Agriculture Alliance

Hannah Thompson-Weeman	VP of Communications
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APPI Energy

Benjamin Etherton	Senior Energy Consultant
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Applied Data Corp. (ADC)

Pete Eckes	Vice President Strategic Accounts
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Associated Food Stores, Inc.

Marty Berlin	Meat Director
Bill Price	Vice President, Fresh Foods
Zan Treasure	Sales Specialist

Ryan Woodfield	Meat Operations Specialist
Associated Grocers, Inc.	
Brian Bernard	Senior Director, Retail Services (LA)
Brian Gaspard	Meat Merchandiser (LA)
Mike Halley	Director, Meat Operations (LA)
Mark Mains	Meat Category Manager (LA)
Thomas Miller	Meat Merchandiser (LA)
Carrie Stanley	Director, Advertising and Marketing (LA)
Peter Tortorich	Sr Director of Perishable Merchandise & Procurement (LA)
Mark Westmoland	Dir. Meat, Seafood Operations & Procurement (LA)
Park Ribble	Fresh Sales Director
Danny Deen	Executive Director, Fresh (Great Lakes Division)
Pat McCarthy	Director of Perishables (Gulf Coast Division)
Jeff Waddingham	Manager, Meat (Nebraska Division)
Kevin Porter	Meat Sales Manager (Springfield Division)
Associated Wholesale Grocers, Inc.	
Curtis Harker	Senior Category Manager
Kevin Hawkins	Vice President, Meat
Charles Jester	Corporate Meat Procurement Manager
Danny Nowak	Meat Sales Manager
Doug Paluch	Meat Sales Manager
Kelly Petty	Meat Specialist
Tyler Robertson	Buyer
Ball's Price Chopper/Hen House Markets	
Ken Jones	Director, Meat and Seafood
Kevin Schalley	Meat Merchandiser
Bargain Barn, Inc.	
Bryan Mizell	Director of Fresh Meat Operations
Wayne Smith	Meat Merchandiser
Craig Wiseman	Meat Merchandiser
Bay Food Brokerage, Inc.	
Cammie Chatterton	President
William Chatterton	Vice President, Operations
Cammie Chatterton	President
Kristen Spiker	Account Executive
Danny Swanick	Business Development Manager
Bemis Company, Inc.	
Pete Bruehl	Marketing Director
Brian Conrad	Marketing
Berndorf Belt Technology	
John Stanbery	Director of Sales
Berry Global, Inc.	
Anjay Bharadwa	Product Management Director
Tom Cremin	Sales Director
Steve Firmery	Sales Director, PVC Film
Mark Goolsby	Western Regional Manager & Case Ready Specialist
Big Deal Food Market	
Miguel Garcia	President
Big Y Foods, Inc.	
Dean Robitail	Meat Sales Manager
Norm Vernadakis	Director, Meat and Seafood
Bilinski's Sausage	
Ron Lasher	National Account Manager
Stacie Waters	President

Birchwood Foods

Gabe Carter	National Account Manager
David Crane	Director of Retail Sales
Doug Ladd	Product Manager
Jim Meka	Retail Regional Sales Manager
Wayne Wehking	Vice President, Sales and Marketing

BJ's Wholesale Club, Inc.

Shawn Gogan	Asst Buyer
Morgan Kelly	Associate Buyer
Samantha Wallace	Associate Merchant

BMO Harris Bank N.A.

David Bechstein	Director, Meat Protein
Kyle Ensign	AVP

Bob Evans Farms, Inc.

John Broekema	Vice President, Retail Business Development
Steve Feidler	Vice President, Sales East
David Garvin	Director
Chris Lambrix	Senior VP, Retail Business Development
Mike Taylor	Vice President, Business Development
Mike Townsley	President, Food Products

Boggeri Sales & Marketing

Mike Boggeri	President
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Bogopa Service Corp.

Anthony Chi	Meat Category Manager
Jin Hur	Meat Supervisor
Jack Kwon	Meat Buyer

Bord Bia, The Irish Food Board

Henry Horkan	Director, North America
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Borgen Systems

Scott Kelly	Southeast Territory Manager
Adam Nevermann	Director, Sales and Marketing
Dick Volkamer	Midwestern U.S. and Canadian Sales

BPI Technology, Inc.

Matt Beaulieu	Sales
Cody Echols	Technical Services Associate
Dustin Furrow	Sales
Craig Letch	Director, Sales and Marketing
Victor Marrero	Sales
Matt Peterson	National Sales Manager
Nick Roth	Director, Engineering
Eldon Roth	President and CEO

Bristol Farms, Inc.

Rick Stidham	Meat Director
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Brookshire Grocery Company

Devon Hawthorn	Category Manager
Kirk Laboyteaux	Category Manager, Meat and Seafood
Jaymes Marion	Category Manager

Bubba Foods, LLC

Sonny Acosta	Western US Sales Manager
Steven Coon	Director of Meat Purchasing
Sheryl Coon	Senior Demonstrator Specialist
Travis Crouse	Operations
Eric Esch	Vice President
Brad Fletcher	VP of Institutional Sales
Rick Glover	Northeast Regional Sales Manager

William Morris	President and CEO
Thomas Pirkle	Regional Manager
Jamie Sakin	Business Development Manager
Andy Stenson	Vice President, Marketing
Burgers Smokehouse	
Rodney Anderson	Vice President Sales
Carl Hermreck	Senior Vice President, Sales
ButcherBox	
Kyle Alexander	Procurement
Michael Billings	Director of Procurement
Thomas Burke	Chief Financial Officer
Robert Quirk	Operations and Procurement Manager
Mike Salguero	Chief Executive Officer
Dan Smith	Head of Growth and Retention
Butterball, LLC	
Bud Trunk	Vice President, Sales Western Division
C&S Wholesale Grocers, Inc.	
Louis Piscottano	Vice President, Meat Operations
Jay Pooler	Merchandising Manager
CAA-GBG	
Ben Ruiz	Director, Licensing
Emily Whalen	Brand Manager
Cacique Inc.	
Donald Park	Director of Procurement
California Beef Council	
Christie Van Egmond	Director, Retail & Foodservice Marketing
Canadian Meat Council	
Chris White	President, CEO
Cargill Protein	
Laurie Allex	Key Account Leader
Katie Blick-White	Marketing Manager
Lee Bonecutter	Business Development and Subject Matter Expert
Bill Carlson	Sales Consultant
Tammy Dobler	Senior Administrative Assistant
Todd Fawver	Vice President, Poultry Business
Dave Gabel	Sales
Hilary Gerard	Brand Manager
Charles Gitkin	Chief Marketing Officer
Stephen Giunta	Chef
Wesley Griffin	Senior Food Scientist
Jerry Grim	National Sales Manager Deli & Prepared Foods
Michael Gunderson	Sales Specialist
Elizabeth Gutschenritter	Vice President, Retail Beef Business Lead
Joel Hager	Sales Manager
Joe Harstad	Sales Specialist
Russ Hill	Retail Protein Sales Manager
Jan Hood	Vice President, Value Added Business Lead
Eric Humes	Strategic Account Leader
Patrick Humphrey	Senior Chef
Mark Johnston	Strategic Account Leader
Matt Karpinko	Sales Director
Mike Kennedy	Canada Sales Lead
Raven Kropf	Key Account Manager
Frank Leandro	Sales
David Lindow	Regional Sales Manager
Cory Lommel	Director, Consumer Insights

Joe Mitchell	Business Development Advisor
Trevor Moore	Bus Dev Leader, Western Canada Sales
Courtney Moore	Associate Marketing Manager
Joe O'Malley	Northeast Sales Lead
Gregory Persing	West Sales Leader
Wendie Phelps	Business Manager, Value Added Protein
Chris Quam	Consumer Insights Manager
Jim Reeves	Sales
Dan Roberts	Beef Retail Sales Specialist
Fred Sousa	East Sales Leader
Jeff Stuczynski	Strategic Account Manager
Patrick Sugrue	Strategic Account Leader
Tyler Tracey	Account Manager
Scott Vinson	Vice President, Retail Sales
Thomas Windish	President, Retail Channel

Carl Buddig & Company

Thomas Buddig	Executive Vice President
James Buddig	Regional Manager
Robert Buddig	Chief Executive Officer
Marty Greene	Manager
Jeff Rowley	Vice President, Sales
Brian Svoboda	Regional Manager
John Vigna	Executive Vice President

Carlson AirFlo Merchandising Systems

Jose Cartamil	Regional Sales Manager
Mark Chenoweth	President

Cascades Specialty Products Group

Dan Cartwright	
Bernard B. Benoit	Sales Manager
Marie-Pier Labarre	Products manager
Karine Martel	Product Manager

Catelli Brothers

Raymond Capozzi	Vice President of Retail Sales and Marketing
Anthony Catelli	President and CEO
Monica D'Ancona	Manager, Retail Accounts

Cattlemen's Beef Board

Chuck Coffey	CBB Vice Chairman
Scott Stuart	CBB CEO

Certified Angus Beef, LLC

Tara Adams	Director, Account Strategy and Key Accounts
Barb Burd	Senior Brand Manager
Martin Lemoyné	Director, Business Development , Canada
David MacVane	Vice President, Retail
David O'Diam	Director, Retail
Gale Rhoads	Director, Business Development
John Stika	President
Mark Sykes	Executive Account Manager
Cathy Toney	Brand Manager
Jeff Vinacco	Executive Account Manager
Randy Whittemore	Executive Account Manager

Certified Hereford Beef, LLC

Kaylen Alexander	Director of Marketing
Trey Befort	Director of Commercial Programs
Donald Lucero	Regional Brand Manager
Brandon Wilson	National Account Manager

Cibo Italia LLC	
Lawrence J. Saia	President
Andrea Scivazappa	CFO
Alessandro Sita	CEO
CKF Foods, Inc.	
Dennis Banks	Sales Vice President, Retail
Tom Kavanagh	Chief Executive Officer
Chuck LaBarge	Sales Vice President, Retail
Nils Larsson	President
Clariant	
John Solomon	Business Development Manager
Clemens Food Group	
Bradford Clemens	Senior Vice President Customer Solutions
Dan Groff	Vice President Fresh Pork
Kiersten Hafer	VP Marketing & Innovation
Tom Kelly	Business Director
Todd Kostick	Business Development Director
Jen Moyer Murphy	Corporate Executive Chef
Victor Orn	Retail Sales Manager, Fresh Pork
Mark Ruth	Business Development Director
Matt Ryan	Sr. Business Manager
Sandra Sage	Vice President, Retail Business Development
Jim Walsh	Senior Business Development Director
Lucas Watts	Business Manager
Coborn's, Inc.	
Mike Richter	Senior Director, Meat, Seafood and Fresh
Coleman Natural Foods	
Kevin Carrazzone	Director, National Sales
Mel Coleman	Vice President, PPMC
Melissa Rullman	National Sales Director, Deli and Specialty
Jeff Tripician	Senior Vice President, PPMC
Ajay Anderson	Regional Sales Manager, Midwest
Ivan Brown	Senior Marketing Manager
Kimberly Jackson	Trade Marketing
Robert Lee	Regional Sales Manager, West
Thomas Soderberg	Regional Sales Manager, East
Bart Vittori	General Manager and Vice President, Pork Division
Colorado Boxed Beef Co.	
Todd Oostra	Director of Purchasing
Corbion	
Tom Burns	Marketing Analyst
Stephanie Carlson	Manager, Marketing Services
Kevon Ledgerwood	Sales Director North America
Brian McKinney	Sales manager
Tom Rourke	Senior Manager, Business Development
Costco Wholesale Corporation	
Tyson Apperson	Buyer
Kristin Dimick	Buyer
Josh Dooley	Buyer
Creekstone Farms Premium Beef LLC	
Satoru Oura	CEO
Cruise Marketing	
Jeff Lober	President
Jim Miller	President

CSB-System International, Inc.

Edward Wood CEO

Custom Made Meals

Matt Barnes VP, Sales and Marketing
John Birdsall Owner
Justin Holstein Executive Chef, Research and Development

Daily's Premium Meats, LLC

Keith Arnold Vice President of Sales, Sales and Marketing
Jeff Handrich President
Steve Hendricks Business Development Manager
John Zimmer Director of National Accounts, Sales &

Dairy & Food Communications, Inc.

Donna Berry Food Scientist, Editor and Consultant

Daniels Meat Company

Joe Sanchez Sales Manager

D'Artagnan

Tim Anderson D'Artagnan Retail Sales Manager
Audrey Brown Category Manager
Ariane Daguin Chief Executive Officer
Katy Holsten D'Artagnan Retail Sales Manager
Stephen Juliano Vice President, Sales
Jeremy Trier D'Artagnan Retail Sales Manager
Andy Wertheim President

Darwin's Natural Pet Products

Javier Morales Director of Operations

DeCicco & Sons Markets

Rondie Chen Meat and Seafood Director
John DeCicco Owner and CEO
Michael Hom Meat and Seafood Specialist

Dietz & Watson

Christina Adams Visual Display Manager
Rob Anthony Special Projects
Mitch Beyers National New Business Development
Kyle Carabello Sales Merchandiser
Matthew Flail Visual Merchandising Specialist
Lane Gordon Account Manager
Robert Herr Regional Manager
Nicholas Kauffman Senior Account Manager
Tim Kelley Director of National Sales
Dimitra Kriticos Corporate Chef
Drew Krohnert Special Projects
Greg Lake Director of Sales Analytics
Jessica Lukis Field Operations Manager
Berardino Sebastiani Sales Merchandiser
William Weiss Eastern Division Sales Manager
Rich Wright Vice Presidents of Sales & Marketing

Donovan Advertising

Jane Flemming Chief Operating Officer
Jean Jones Chief Creative Officer

Dorothy Lane Market, Inc.

Mike Chrisman Meat Manager
Jack Gridley Vice President Meat, Seafood and Deli

DS Smith Packaging

Peter Bugas General Manager, Cambridge and Columbia
Elyse Danielle Cristos Field Sales Manager

Eddy Packing Company, Inc.	
Bryan Blackmon	Purchasing Manager
Dean Sanders	Executive Vice President
Kieley Stibich	Vice President, Retail Sales
Emerson Automation Solutions	
Jeff Boedigheimer	Business Development Manager
Emkay Food Sales	
Ronny Miller	Retail Sales Director
Empire Marketing Strategies	
Brent Beerens	President, Empire Corporate Brands
Bob Halpin	Sales
Greg Lennon	President, Atlanta Division
Charles Miller	Corporate Brand Manager, Meat
Bill Stoutenburg	Fresh Meat
Empire Packing / Ledbetter	
Thomas LeBeau	Director of National Accounts
ESI Group USA	
Tim Nguyen	Regional Vice President
Eurpac Service Inc.	
Alex Sizemore	Senior Director, Marketing
Michael Stewart	President
Express Markets, Inc.	
Rob Hontz	Director of Sales & Marketing
David Weaber	VP of EMI Analytics, Beef
F.B. Packing Co. Inc	
Leo Bertolino	Associate
Fareway Stores, Inc.	
Greg Bearbower	Director of Meat Operations
Jeff Cook	Vice President of Market Operations
Keith Kilgore	Market Coordinator
Steve Peterson	Buyer
Farmington Foods, Inc.	
Allan Flynn	Director Sales & Marketing
Tim Hogan	Vice President, Retail Sales
Ken Peak	Director of Key Accounts
Jack Vogt	Director of Culinary Innovation
Ferreira Foodtown	
Jason Ferreira	President
Festival Foods	
Tanja Gilray	Fresh Foods Buyer
Mike Zimmerman	Senior Director, Meat
Flavorseal	
Dan Roberts	Regional Sales
Food Circus/Foodtown	
Chris Danelson	Meat and Seafood Manager
Louis Scaduto	President
Louis Scaduto	Information Technology Manager
Food Giant Supermarkets, Inc.	
Bryan Gilley	Director, Meat/Deli
Food Lion, LLC	
Josanna Busby	Category Manager
Robert Fulghum	Assistant Category Manager
Chris Holmes	Category Manager Fresh Prepared Foods HMS

Brandon Moorefield	Category Manager, Pork and Poultry
Todd Morgan	Assistant Category Manager
Jay Padgett	Manager, Private Brands

Food Marketing Institute (FMI)

Nathalie Etori	Manager, Event Marketing
Laurie Gethin	Director, Education
Maggie Locker-Polding	Assistant, Registration and Meeting Services
Rick Stein	VP, Fresh Foods
Peter Collins	Director, Business Development

Force of Nature

Taylor Collins	Founder
Katie Forrest	Founder
Robby Sansom	Founder

Fresh Mark, Inc.

Emily Anthony	Marketing Manager
Hiram Cardenas	Associate
Timothy Cranor	President and COO
Troy DeGeorge	National Sales Account Manager
Brittney Fort	Marketing Coordinator
Isaac Genshaft	VP of Business Integration and Innovation
Kent Hayes	National Accounts
Bill Helmstetter	National Accounts Sales Executive
Barry Jackson	National Account Manager
Brittany Julian	Sales Manager
Bernhard Mueller	National Accts. Sales Executive
Bryan Newton	National Account Sales Executive
Geno Pasquinelli	National Account Sales Manager
Chris Rome	Director, National Retail Sales
Jennifer Shriver	Special Accounts Manager
Mark Slaughter	VP, Sales
Doug Small	Director, National Retail Sales
Frank Tislaretz	Salesman

Fresh Sausage Specialists

Greg Basham	Vice President of Sales
Tony Cunningham	Director of Sales and New Business
Donielle Stewart	Director, Business Development

Fresh Strategies

Bret Berg	President
Jason Swanson	Sales Manager

Frick's Quality Meats, Inc.

Ellory Frick	Director Of Marketing
Dave Frick	President
Marty Henleben	Regional Sales Manager
Tina Holtmeyer	Regional Sales Manager
Rob Kastens	VP of Sales
Alan Sickendick	Director, Retail Sales
Terry Wise	Vice President, Sales and Marketing

Fulton Market Group

D. Corbin	Analyst
Adriel Gonzalez	Managing Director

Georgia Power Company

Randall Bird	Key Account Manager
Shelby Holsomback	Industrial Key Account Manager

Giant Food

William Campbell	Meat and Seafood Director
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Giant Martins	
Jim Brinser	Category Manager
David Copenhaver	Manager of Field Merchandising
Jennifer Price	Buyer III
Patrick Sanagursky	Category Manager
Global Animal Partnership	
Amy Cunningham	Business Development & Outreach Associate
Diane McDade	Business Development Manager
Golden West Food Group	
Peter Andoni	Associate
Tony Cimolino	Chief Marketing Officer
Isaac Flores	R&D Chef
Pano Fragoulis	Executive R&D Chef
Louis Graff	Sales
Keith Jahnke	Associate
Ryan Jahnke	Associate
Zack Levenson	Chief Operating Officer
Randy Rogers	National Account Manager
Daniel Vargas	Corporate Executive Chef
Rick Walker	Sales
Timothy White	Executive Vice President
Grocery Outlet Inc.	
Steve Keville	Meat Buyer
Weldon Weatherly	VP, Fresh Meat, Frozen and Refrigerated Foods
GS1 US	
Elizabeth Sertl	Director, Retail Grocery Industry Engagement
HAC, Inc.	
Koen Vermeylen	Director of Meat & Seafood
Hain Pure Protein	
Ted Maguire	Chief Sales Officer
Barbara Quijano	VP, Key Accounts, Creative Services & Customer Service
Bill Rogers	Director of Sales, Northeast
Jenny Schenk	Director of Sales, Southeast
Hannaford Supermarkets	
Chad Bilodeau	Category Analyst
Leigh Chase	Seafood Category Manager
Norm Daigle	Director, Meat & Seafood, Category Mgmt, Pricing, & Merchandising
Gail Hatem	Our Brands Manager, Fresh
Ryan Merone	Merchandising Manager
Michael Palumbo	Category Analyst
Harps Food Stores, Inc.	
Dakota Breshears	Category Manager
Layne Chastain	Meat Director
Harris Teeter LLC	
David Hess	Category Manager
Luke Laperriere	Former VP Meat/Seafood Sales & Procurement
Fred Printzlau	Manager, Perishables Procurement
Troy Wilhelm	Buyer
H-E-B	
Nick Hudek	Business Development Manager
Mike Jarzombek	Vice President, Meat Marketing and Procurement
Matt Serrano	Business Development Manager
Matt Walters	Director, Meat Procurement

Heinen's

Eric Besselman	Director, Meat Operations
Doug Candow	Meat Merchandiser
Catie Cantrell	Meat Merchandiser
Bob Crutchfield	Meat Manager
Bob Cutright	Meat Merchandiser
Paula Skladanowski	Marketing

HelloFresh

Marcel Comtois	Vice President, Procurement
Matthew Sytsema	Senior Protein Strategy Manager

Holten Meat Co.

Bob Coyle	Managing Director
Dave Holm	Sales
Dave King	Director of Retail Sales
Jessica Smith	Product Manager
Ric Smith	VP Sales and Marketing
Jeff Sullivan	Retail Business Manager
Karen Twillmann	Marketing Director

Hormel Foods Corporation

Joe Ciola	Senior National Accounts Manager
Joel Demro	Senior Manager, Category Sales
Paul Peil	Director, Fresh Meat Sales
Jeff Schultz	National Sales Manager
Patrick Schwab	Vice President, Sales

HS&R Sales and Marketing Solutions

Chris Spangler	Chief Operating Officer
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Hy-Vee, Inc.

Jason Pride	Vice President, Meat, Seafood, Delicatessen
Mike Wastenev	Director of Purchasing, Commodities

IdentiGEN

Kent Partida	Senior Vice President
Greg Peters	Director of Technical Accounts

Indiana Packers Corporation

Shannon Boutin	Consumer Marketing Manager
Ric Herrera	VP of Sales and Marketing
Brooklyn Maple	Director of Marketing
Corey Thompson	Sales Director
Michael Ward	Sales Director

Instituto Nacional De Carnes, INAC

Sebastián Barcos	Chef
Cecilia Juarez	Project Specialist
Lorena Otegui	Corporate Image Assistant
Daniel Perdomo	Chef
Lautaro Perez	Marketing Manager

Interstates Companies

Jim Higley	Director of Business Development
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Intralox L.L.C.

Danny Bujold	Global Account Team Leader
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Intralox, Inc.

J Philip Coombs	Independent Consultant
Debbie Meyer	Administrative Assistant
Greg Strang	Director, Food Safety

J&B Group, Inc

Tom Janssen	Business Development Manager
Jeff Johnson	Director, Retail Innovation
Pam Pries	Purchasing Manager

J&G Foods, Inc.

Bill Leva	Chief Operating Officer
Joe Piperato	President

Jack's Super Foodtown

Adam Shapiro	Director, Total Store Operations
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JBS USA, LLC

Elena Anderson	Beef Marketing
Cody Barton	Outside Sales, Fed Beef
Chris Benson	Head of Ground Beef and Value Added
Scott Blackwill	Sales Director
Charlie Bradbury	Regional Grass Fed Program
Alan Byers	President, Regional Beef
Sarah Cameron	Retail Sales
Kim Clark	Outside Sales, Fed Beef
Chad Cliburn	Head of Retail Field Sales, SW Division
Linden Cowper	Premium Programs Manager
Nicole Curtis	Marketing
Jason Donchak	Outside Sales, Fed Beef
Shannon Grassl	Regional Beef Pricing, Scheduling & Inside Sales
Kindra Hall	Brand Manager
Jeff Hamilton	Vice President, Fed Beef Outside Sales
Stephanie Hamilton	Assistant Brand Manager
Tyler Hodgson	Head of Greeley Sales
Kim Holzner	Head of Imports
John Jay	Pork Sales, Fort Worth
Matt Jenkin	Sales Manager
Chris Jensen	Vice President, Key Account Sales
Brad Lorenger	Vice President, Sales and Marketing
Ross Manternach	Head of National Account Sales
Jolene Manternach	Head of Pork Marketing
Sam McConnell	COO, JBS Southern
Bill Munns	Beef Marketing
Andre Nogueira	Chief Executive Officer
Martin Ortiz	Field Sales
Sam Phillips	Sales Manager
George Price	Head of Inside Sales
Lisa Scebbi	Marketing
Tim Schellpeper	Regional Beef Manager
Nicholas Schrader	Regional Beef Sales
Dave Smith	Head of Retail Sales, Pork
Erin Taylor	Beef Marketing
Jess Williams	Marketing Consultant

Jennie-O Turkey Store

Jerry Boerger	Director of Sales
Steve Brooks	Director of Retail Sales
Cris Eide	Director Business Development
Brent Koosmann	Director, Marketing
Chuck Meath	Senior Vice President, Retail Sales
Lance Price	Director, Walmart and Sam's Club
Richard Romanoff	President
James Tupy	Vice President, Retail Sales

Jensen Meat Co., Inc.

Patricia Lavigne	Vice President, Executive Accounts
Abel Olivera	Chief Executive Officer

Jerry's Enterprises, Inc.	
John Erhard	Director, Meat and Seafood
Jet.com	
Dana Klion	Category Manager
Jewel-Osco	
Mark Bristow	Meat Sales Manager
Guy Cardinal	Sales Meat Manager
Steve LeGare	Meat Sales Manager
JOH	
Christopher Darmody	Executive Vice President, JOH Fresh
Jeff Hodge	Account Executive
Joe Vandette	Vice President, JO'H Fresh
Johnsonville Sausage, LLC	
Michael Anderson	East Region Coach
Mike Anthony	Region Coach
Kerry Dobric	West Region Sales Manager
Jim Huston	Director, U.S. Retail Sales
Tom Schneider	Sales Director
Megan Witt	West Area Coach
JTM Food Group	
Joe Maas	Vice President of Production
Kayem Foods Inc.	
Matt Monkiewicz	Vice President, Marketing
Phillip Bardsley	Marketing Associate
Scott Cassel	Southeast Business Manager
Jennifer Fukuda	Senior Brand Manager
Karl Johnson	VP of Marketing
Sarah Menard	Sales
Ed Perez	Region Sales Manager
Chris Reisner	Vice President, Sales
Katie Smith	Associate Brand Manager, al fresco
Susanna Tolini	Executive Research Chef
Kepak Group	
Victoria Antoniades	Marketing & Brand Strategist
Joanne Farrelly	Kepak North America
Kiobassa Provision Company	
Charles Harris	Senior Vice President
Harold Heinze	Director Of Marketing
Michael Kiobassa	President
Dan Marshall	Vice President of Supply Chain
Rich McClain	Senior Buyer
Jordan Moy	Regional Sales Manager
Travis Trevino	Associate Product Manager
Elmer Vazquez	Vice President of Retail Sales
Bill Wagner	Executive Vice President/CFO
Laura Waldrum	Senior Brand Manager
Knowlan's Super Markets, Inc.	
Mike Brantner	Director, Retail Meat and Seafood
Jason Herfel	Vice President, Merchandising
Kuraray America	
Brian Silva	Sales Representative
K-VA-T Food Stores, Inc.	
Steve Holloway	Director, Meat Operations
Jamie Tignor	Meat Category Manager

La Montanita Food Coop	
Myles Lacayo	Meat Manager
Land O' Frost, Inc.	
Timothy Baran	Innovation Chef
Don Boelens	General Manager
Shawn Callahan	Area Sales Manager
Trish Carlin	Customer Business Manager
Vanessa Chapa	Sales and Marketing Assistant
John Clark	Sr Manager, Category Mgmt & Shopper Insights
Patrick Henrie	Regional Sales Manager
Chris McCarthy	Vice President, Sales
Bill Meredith	National Account Manager
Mark Miller	Director of Brand Marketing
Reggie Moore	Senior Vice President, Sales and Marketing
John Pelles	Director of Sales
David Van Eekeren	President
Frank Warren	Region Sales Manager
Dan Weiskopf	Regional Sales Manager
Laurel Grocery Co., LLC	
Jason Lindsey	Senior Category Manager
Carey Otwell	Vice President, Fresh
Levitt Foods	
Art Levitt	President/CEO
Rob Levitt	National Sales Director
Longhini Sausage Co	
David Kemp	Chief Executive Officer
Rich Longhini	President
Niina Saaskilahti	Regional Sales Manager
Louis Foods, Inc.	
Jerry Dyvig	Vice-President, Sales and Services
Robbe Mehl	VP Sales and Product Development
Rick Rothhaas	President
Lowes Foods, LLC	
Sam Walton	Director, Center Store Pricing
Maher Marketing	
Mike Fuchs	VP Sales
Dave Huddle	President
Diana Moravits	Sales
Maple Leaf Farms	
Carmen Darland	Chicken Marketing Director
Albert Hernandez	Midwest Regional Sales Manager
Jeff Lohser	Director of Sales Chicken Division
Greg Moore	Mid Atlantic Region Sales Manager
John Palumbo	National Retail Sales Manager
Marketechs	
Craig Landis	Warehouse and Setup Manager
Martin's Super Markets, Inc.	
Chris Haygood	Director of Meat and Seafood
Matherne's Market	
Ernie Matherne	Owner and President
McVean Trading	
Taylor Fenton	Cattle Analyst
Robert Gardner	Hog Analyst
Will Kaelin	Analyst

Meat & Poultry Magazine

Kimberlie Clyma	Managing Editor
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Meating Place

Lisa Keefe	Editor
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Meijer, Inc.

Dave Neitzel	Buyer
Crystal Ackerman	Director of Merchandising
Ryan Michael DeLeon	Buyer and Merchandiser, Meat
Doug Foster	Buyer
Andrew Harsini	Associate Buyer
Brad Wisniewski	Associate Buyer

Merchants Distributors, LLC

Buddy Jones	Retail Sales Counselor
Ralph Thompson	Meat Merchandiser
Don Underwood	Director of Meat Operations

Merck Animal Health

Richard Burton	Strategic Account Manager
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Meyer Natural Foods

Mike Elam	Director, LLB Branded Sales
Sean Gagnon	VP, Retail Sales
Tom Gonzalez	Director of Branded Private Label
Bret Hultman	Director, Retail Sales
Katherine Ishmael-Bolin	Sales Support
Erick Jensen	President, Local Harvest
Dom Leal	VP, Retail Sales, East
Scott Murphy	VP, Retail Sales, Central
Paul Nobbe	Brand Champion
Donna Pluimer	Sr. Sales Analyst
Mike Pratt	Senior Vice President, Sales
Gregg Sproed	VP, Retail Sales, West
Reid Swanson	VP, Retail Sales, Great Plains and Southeast
Tim Weiler	Senior VP, Retail Sales

Midan Marketing

Danette Amstein	Principal
Kerry Beauchemin	Account Planner
Greg Briere	Creative Communications Director
Katy Bruce	Senior Account Executive
Molly Conlon	Account Executive
Jalen Fair	Media Buyer
Tom Faucett	Associate Creative Director, Copy
Patrick Fleming	Brand Specialist
Megan Griesheim	Account Coordinator
Steve Hixon	Strategic and Business Services Director
Jessee Leili-Jones	Associate MarTech Director
Jackie Lopez	Senior Account Executive
Rick Lowe	Senior Market Research Manager
Hilary Mayclin	Account Supervisor, Tyson
Jo Ann Natt	Account Executive
Maggie O'Quinn	Midan Brand Growth Manager
Erica Prescott	Junior Account Executive
Mysti Richardson	Senior Account Executive
Cassandra Staley	Social Media Coordinator
Alex Tyre	Senior Account Executive
Michael Uetz	Principal

Mitchell Grocery Corporation

Kirk Clark	Director of Merchandising
Tim Couch	Meat Department Buyer

Montpak International

Alex Fontaine	President/CEO of Montpak Int'l
Benjamin Fontaine	Production Manager

Mountain States Rosen, LLC

Brian Fall	Sales
Brad Graham	President
Mehdi Shirazi	Director
Chris Sutliff	Sales

Mountaire Farms, Inc.

Tom Kramlich	Regional Sales Manager
Bruce Mooney	Vice President, Retail Sales
Wayne Morgan	Regional Sales Manager

MPS Enterprises, LLC

Gordon Bennett	Chief Executive Officer
Sean Bennett	Senior Vice President of Business Development
David Berger	Account Manager

Multisorb Technologies

Jeff Brown	Business Development Leader
George Ellis	Business Development Manager
Derek Garner	Chief Business Development Officer

Multivac, Inc.

Matthew Malott	President/CEO
----------------	---------------

Nam Dae Mun Farmers Market

Jay Kim	Chief Executive Officer
Ryan Jaeyoung Kim	Meat Buyer

National Beef Packing Company, LLC

Bob Bean	Director, Marketing
Sybil Birmingham	Marketing Manager
Jeff Hampton	Exhibitor Appointed Contractor
Zack Kimbell	VP, Case Ready Business Development
Tim Klein	President and CEO
Tom Klein	Senior VP of Sales and Marketing
Doyle Leefer	Director of Variety Meats & Rendered Products
Monte Lowe	Executive Vice President, Sales and Procurement
Kent McCormick	Director, Value Added Programs
Craig Miller	Field Manager, Consumer Ready Sales
Steve Orton	VP, Ground Beef & Trim Sales
Nick Pasquini	Business Manager of Value Added Programs
Kevin Rauschelbach	Field Marketing Manager
Scott Reale	Field Marketing Manager
Eric Siegfried	VP, Customer Development and Customer Service
Wes Steimel	Business Manager of Value Added Programs
Joe Sterle	Director of Field Sales
Cathy Sturm	Marketing Brand Manager
Jim Sturm	Chef
Matt Tadlock	Exhibitor Appointed Contractor
Scott Utech	Business Manager, Value Added Programs
Keith Welty	VP, Marketing

National Cattlemen's Beef Association

Chase DeCoite	Director, Beef Quality Assurance Programs
Alisa Harrison	Senior VP, Global Marketing and Research
Laura Hinton	Director, Retail Engagement
Jennifer Houston	2019 NCBA President

Jason Jerome	Senior Director, Retail Engagement
Marvin Kokes	Senior VP, Corporate Relations and Events
Alison Krebs	Director, Market Intelligence
Laurie Munns	2019 Chairman, Federation Division
Ben Petuchowski	Associate Director, Content Marketing
Season Solorio	Senior Exec. Dir., Brand Marketing & Communications
Steven Wald	Exec. Dir., Manufacturer & Distributor Engagement
Bridget Wasser	Exec. Dir., Meat Science & Supply Chain Outreach

National Co+op Grocers

Daniel Hein	Meat and Seafood Specialist
Greg Johnson	National Meat and Seafood Coordinator
Josh Zeck	Meat Manager

National Pork Board

Tara Ann Dugan	Director, Consumer and Marketplace Insights
Clay Eastwood	Manager, International Marketing
Neal Hull	Director, Channel Marketing
Angie Krieger	Assistant Vice President, Channel Outreach
Jason Menke	Director, Marketing Communications
James Murray	Certified Exec. Chef, National Channel Account Mgr
Randy Newton	Channel Marketing Manager
Elaine Otte	Channel Marketing Manager
Neel Sahni	Manager, Food Service Marketing
Jarrold Sutton	VP, Domestic Marketing

National Turkey Federation

Beth Breeding	Vice President, Communications and Marketing
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Nature's Cut international LLC

Diego Pomi	General Manager
Henry Santos	Director
Gino Santos	Director

NH Foods Australia

Anthony Naticchia	North American Sales Manager
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Nicholas Markets, Inc.

David Maniaci	Chairman and CEO
Nick Maniaci	Manager

Niman Ranch

Kay Cornelius	Vice President, Sales
Barry Luce	Director, National Accounts
Earle Rubin	Director of Retail Sales, East
Richard Sanders	Retail Business Director

NML Marketing

Frank Miranda	President
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Nolan Ryan Beef

Cody Marburger	Vice President, Operations
Chris Meighen	Vice President, Sales

North American Meat Institute

Robin Cornelison Troy	Director, Conference Services and Sponsorships
Nicole Vetsch	Manager, Education & Workforce Development
Ann Wells	Director, Education and Workforce Development
Eric Zito	VP, Membership & Exposition Services

North Country Smokehouse

Aaron Corbett	COO
Mike Kelly	Director of Business Development

Northeast Food Marketing

Dennis Keresey	President
Jeff Lane	Associate

Mike Muha	Senior Vice President of Sales and Operations
NW French & Associates	
Darin Millar	Sales
O&T Farms Ltd.	
Elan Ange	Chief Executive Officer
Rob Dreger	International Market Development
OBE Organic	
Eleanor Rands	Sales and Production Executive
Oberto Snacks, Inc.	
Bruce Firnhaber	Director of Procurement
OK Foods, Inc.	
Brian Caravella	Director, Retail Sales
Randy Meyers	Senior Vice President Sales and Marketing
Allyson Peek	Regional Sales Manager
Open Range Beef	
Greg Miller	President
Organic Valley	
Pete Bassett	Business Development Director
Dave Greening	General Manager
Katya Leonard	Engagement Coordinator
Ozark Mountain Poultry	
Cole Everett	VP of Sales
Shelby Gragg	Sales Manager
Belinda Mayo	VP of Marketing
Nathan Miles	Marketing Manager
Pederson's Natural Farms	
Neil Dudley	Vice President of Marketing
Christa Halliburton	Operations Support Specialist
Cody Lane	President
Terry Maul	VP of Business Development
Gary Stevens	Eastern Region Sales Manager
Hans Vanderenden	Sales Manager
Penton Media, Inc	
Jerry Rymont	Strategic Business Director
Perdue Farms, Inc.	
Jim Perdue	Chairman, Perdue Farms, Inc.
Perdue Foods	
Dave Brittingham	Director, Trade Marketing
Steven Evans	President, Premium Prepared Foods
Bryan Hurst	Senior VP, Sales and Marketing
Bob McClain	Senior Trade Marketing Manager
Mark McKay	President, Premium Poultry
Chris Moyer	Corporate Executive Chef
Shawn Reese	Senior Corporate Chef
Andrew Urban	Senior VP, Sales and Marketing
Piggly Wiggly LLC	
Charles Rollins	Meat and Deli Director
Pilgrim's Corporation	
Garrett Lorton	Sales
Lawence Stephens	Retail Sales
Tom Haynie	Sales
Pilgrim's Pride Corporation	
John Curran	Vice President, Sales
Dan Daley	Sales

Kelsie McEndaffer	Brand PR & Communications Manager
Pine Manor/Miller Poultry	
Jim Cataline	Service Manager
Fred Lechlitner	Director of Sales
Galen Miller	Owner and President
Clayton Miller	Sales Rep.
Ken Rains	Service Manager
Joel Shepherd	Sales and Service Rep.
Pineland Farms Natural Meats	
Sean Durnan	Sales and Marketing Associate
Jeff Johnson	Vice President of Sales and Product Development
Pioneer-Horizon	
Eric Fortin	Account Manager
Eric Mayo	Account Manager
Bryant Parnell	Account Manager
Rodney Rodman	Account Manager
Blake Ward	Account Manager
Pitman Farms	
David Pitman	Owner
Michael Vance	VP of Sales
Plumrose USA, Inc.	
Dave Forte	Sales
Madolynne Oaks	Marketing
Laura Rincon	Marketing
Premier Proteins, LLC	
Tim Haas	Chief Executive Officer
Michael Moritz	Regional Sales Manager
Alyssa Price	Executive Chef
Isaac Rothfuss	Regional Sales Director
Premier Sales Solutions	
Justin Clark	Sales Manager
Kevin Fitzgerald	Sales Manager
Derrick Stapley	Division Manager
Mark Wilhelm	President
Price Chopper Supermarkets	
Jason Resner	VP of Meat, Seafood, & Packaged Deli Merchandising
Progressive Grocer	
James Dudlicek	Editorial Director
PSK Supermarkets	
John Rota	Meat Manager
Publix Super Markets, Inc.	
John Craig	Buyer, Meat and CPG
Cesar Urrea	Category Manager
Pyramid Food Brokers, Inc.	
Tim Armour	President
Mike Turk	Meat Director
Queue Marketing Communications Group	
Mary Mohr	Senior Account Director
Quirch Foods	
Andy Broce	Category Manager
Kevin Miller	Purchasing Manager, Pork
Anthony Schneider	Purchasing Director
Jeff Slattery	Purchasing Manager, Poultry

Raley's	
Todd Allen	Director, Meat and Seafood
Faith Garrard	Category Manager, Meat and Seafood
Ralph's Markets	
Brandon Trosclair	President
Red Bird Farms	
Kevin Fitzgerald	Vice President , Retail
Tom Griffiths	Sales Merchandiser
Lloyd Lister	Sales Merchandiser
Tracy Radford	Sales Merchandiser
Mareo Torito	President
Reser's Fine Foods, Inc.	
Ryan Cook	Regional Account Manager SE
John McCarthy	Category Manager
Respect Foods, Inc.	
Ken Hartman	President
Ed Reina	National Sales Manager
Results Sales	
Ed Allaway	Perishable Meat Specialist
River Valley Market	
James Zilaro	Meat Manager
Roche Bros. Supermarkets, Co.	
Frank Vitale	Director, Meat Operations
Rocky Mountain Natural Meats LLC	
Elizabeth Boulos	National Sales and Marketing
David Kent	Senior Vice President, Sales
Rodon Foods	
Cory Rasmussen	President
Robert Rasmussen	Account Manager
Rosauers Supermarkets, Inc.	
Mike Alfson	Meat Merchandiser
Mike Shirts	C.O.O.
Rose Packing Company	
Steve Blum	National Account Manager
Rose Ranch	
Robert Dickman	Director of National Sales
Patty Dickman	
Sam's Club	
Courtney Berto	Senior Merchant
Jesse Collins	Sr. Product Development Mgr., Meat & Seafood
Riley Snyder	Sr. Product Mgr., Meat & Seafood
Laurin Ziemann	Merchant, Beef
Sanderson Farms, Inc.	
Steve Barkun	Director, Sales
Peter Boehme	Corporate Sales Manager, Retail
Hillary Burroughs	Manager, Marketing
LaDonna Byrd	Marketing Product and Regulatory Specialist
Kathy Byrd	Marketing Product and Regulatory Specialist
Andrew Cole	Corporate Sales Manager, Retail
John Coleman	Corporate Sales Manager, Retail
David Gadd	Manager, Retail Sales
Jeff Green	Commodity Meat Manager
Jason Halley	Retail Accounts Specialist
Natalie Herndon	Marketing Product Specialist

Will Miller
Brian Schmoekel
Joe Steinwinder

Corporate Sales Manager, Retail
Manager, Corporate Sales
Corporate Sales Manager, Retail

Save On Foods

Bryan Gudjonson

Director, Fresh Meat Merchandising

Save-A-Lot, Ltd.

Jack Bell

Category Director, Meat

Save-On-Foods

Alan Chong

VP, Business Development

Schnuck Markets, Inc.

Steven Englert

Category Manager, Meat

Tony Manker

Category Manager, Meat

Brian Quinn

Meat, Seafood Buyer and Analyst

Schweid & Sons

Roger Ghosh

Director of Retail Sales

Brad Schweid

C.A.O.

Jamie Schweid

President, CEO

Seaboard Foods

Monica Camarin

Senior Brand Manager

Joshua Carlson

Director, Product Development and Innovation

James Duncan

NE Region Sales Manager, RT, Sales

David Eaheart

Director, Communications and Marketing

Terry Parks

Regional Sales and Broker Manager Sales

Kevin Smith

Vice President, Sales and Marketing

Brian Taphorn

Vice President, Business Development

Patrick Watkins

Director of Field Services

James Whitmore

Midwest Region Sales Manager, Sales

Sealed Air Corporation

Susan Beebe

Business Development Manager

Sean Brady

Market Development Manager

Stacey Couch

Market Development Director Retail

Marc Edlein

Market Services Manager

David Emmel

Director of Customer Engagement

Jon Hansen

National Retail Account Mgr., Retail Task Force

Shawn Harris

Marketing Director

Jerry Kelly

National Business Development Manager

John Kelly

Marketing Manager

Vito Santoro

VP, Sales and Marketing

Jay Wilson

VP, Food Packaging Solutions, North America

Seward Community Co-op

Roderick McCulloch

Meat Manager

Shelby Publishing Co., Inc.

Terrie Ellerbee

Editor

Jan Meade

Vice President, Business Development

Stephanie Reid

Executive Vice President, Publisher

Sherwood Food Distributors

Robert Lipson

President SFD Cleveland

Michael Lipson

Director of Sales

Jacob Lipson

Buyer

Shop & Save IL

Marc Velasquez

Meat & Seafood Director

ShopRite Glass Gardens, Inc.

Terry Glass

Owner

SHS

Christy Niebaum

Associate Account Director

Smithfield Farmland Sales Corp.

Frank Dominguez Corporate Chef

Smithfield Foods Inc.

Dedra Berg Senior Director, Marketing
Will Brunt Senior VP and Chief Innovation Officer
Sam Clayton Sales Director
Henry Dalbec Senior Director, Retail Sales, Fresh Pork East
Bob Darrell VP, Fresh
Robert Delaney Director of Innovation
Russ Dokken Executive VP, U.S. Packaged Meats
Steve France Senior VP and GM Deli and Industrial Sales
Bernie Kampschmidt Sales Director
Brian Murray VP, Retail Sales, West Region
Dennis Organ Chief Operating Officer, U.S. Operations
Carmen Pacheco Associate
Mike Paribello Senior Director, Marketing
John Pauley Chief Commercial Officer, Packaged Meals
Shannon Rice Associate
Russell Rutter Senior VP, Retail Packaged Sales East
Kenneth Sullivan President and CEO
Dhamu Thamodaran Executive VP, Chief Strategy and Hedging Officer
Daniel Thurston Director of Sales
Tim Totin VP, Central Division
Eric Waddell VP, Retail Sales, Kroger
Jeff Warner VP, Innovation
Joe Weber Executive VP, Growth and Emerging Businesses
Tracy Wind Senior VP, Retail Packaged Sales West
Tim Zimmer Chief Marketing Officer

Smithfield Packing Company, Inc.

Mark Cassady VP, Retail Sales Southeast
Michael Merritt Director, Marketing
Ed Tanksley Senior Director, Sales
Keller Watts Senior VP, Packaged Business Management

Sobeys Inc

Justin Wright Lamb/Veal/Grinds/Specialty Meats Service Case
Gary Cahoon Category Merchant for Beef
Bryon Feener Senior Director, Meat and Seafood Merchandising

Sosland Publishing

James Boddicker National Sales Manager
Erica Shaffer Digital Media Editor

Southeastern Grocers

Lindsey Cahill Category Manager Pork and Smoked Meats
Walt Grossman Vice President Meat and Seafood
Timmy Hinkle Category Manager Beef and Poultry
Josh Piatek Director Meat and Seafood
Shawn Savage Category Manager Beef and Poultry
Frank Thurlow Director Beef and Poultry
Dave Bieniek Senior Manager, Strategic Sourcing

SpartanNash Company

Rick Bellrichard Sales Manager, West
Todd Deal Buyer, Fresh Meat
Ron Gardner Sales Manager, Fresh
Timothy Kent Director, Meat and Seafood

Springer Mountain Farms

Rhett Durham Retail Sales Support
Adam Durkin Supply Chain Manager
Brad Moore Tray-Pack Sales Manager

Taylor Osborne	Retail Sales Support
Jeff Paschall	Business Development Mgr., Retail & Deli Sales
Jonathan Penson	Chef, Springer Mountain Farms
Gary Propst	Retail Sales Support
Stan Streetman	Retail Sales Support

Stop & Shop

Robert Fialli	Fresh Beef Buyer
Scott Gilfillan	Category Manager
Brian McElmoyle	Buyer
Bradley Smith	Category Manger
Harry Giglio	Vice President of Meat

Strauss Brands

Lori Dunn	Vice President, Sales and Marketing, Beef
Greg Martin	Chief Operating Officer
John Massa	Director of Retail Sales
Brian Phillips	Executive Director of Business Development
Steve Starnes	International Sales
Tim Strauss	President
Randy Strauss	President

Streetmarc Advertising & Marketing, LLC

Chris Marcocci	President
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SugarCreek

Christopher Dixon	National Account Manager
Lance Layman	Vice President of Business Development
Mike Rozzano	Executive Vice President, Operations

Sullivan Higdon & Sink

Luke Hurd	Digital Immersion Director
Paul Rainer	Account Manager
Greg Standifer	Brand Reputation Manager
Jenny Ricco	Account Director

Summit Marketing Partners

Ben Hoppe	Owner, Vice President
Gary Woltjer	President

SunFed Ranch

Adam Bauer	Sales Manager
Matt Byrne	Founder and President
Chris Donati	Owner
Chris Druce	Sales
Ashley Finster	Vice President of Marketing
John Flynn	Sales
Jeff Jarvis	Sales
David Patragnoni	Sales

Superior Farms

Daniel Clay	Texas Area Sales Representative
Moustapha Diop	Regional Retail Sales Mgr. – East Coast Region
Ondreas Hall	Retail Accounts Specialist
Bob Mariano	Director of Marketing
Gary Pfeiffer	Executive Vice President, Sales and Marketing
Mike Ridinger	Western Region Retail Sales Manager
Rick Stott	Chief Exective Officer

SUPERVALU INC.

Steve Frederick	Manager Category Merchandising
John Velez	Meat Sales Consultant (Florida)
Terry Albonetti	Meat Merchandising Catagory Manager
Dave Butler	Corporate Sourcing Manager II, Beef and Pork
Michael Flack	Director, Meat and Seafood

Terry Franklin	Director of Meat and Seafood, Retail West
Brian Novak	Manager, Category Merchandising
Tony Ott	Director of Merchandising, Meat and Seafood
Bill Robinson	Director of Meat and Seafood Sales, PNW
Tom Sargent	Senior Dir., Meat, Seafood, Deli & Director of Regional Merchandising
Tim Watts	Vice President of Merchandising
Tom Wells	Category Manager for Fresh Meat, Retail
Scott Worrell	Senior Director Procurement, Meat and Seafood
Mark Walthers	Dir. of Sales, Meat and Seafood (West Region)

SUPERVALU INC./UNFI

Randy King	President
Daniel Murphy	Corporate VP, Meat & Seafood and Senior VP, Regional Merchandising

Swaggerty's Farm

Jonathan Amidei	Chief Operating Officer
John Gladney	Marketing Manager
Doug Skeoch	National Sales Manager
Garret Swart	Retail Regional Manager
Dan Turner	National Retail Sales Manager

Tall Tree Foods

Jeff Baker	Executive Vice President of Sales
Tom Danneker	President/CEO
Rebecca Herrmann	Director of Marketing

Tampico Spice Co

Andrew Slade	National Sales Manager
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Target Corporation

Alex Corbishley	Director, Meat and Seafood
Stephen Scott	Senior Product Development Scientist
Brooke Wentzlaff	Senior Buyer

TC Transcontinental Packaging

Tim Kieny	VP, Sales and Marketing, Meat and Cheese
Rob Taylor	Director, Strategic Accounts, Protein
Pamela Wools	Sales Manager, Protein

Texas Beef Council

Robert Hale	Manger Channel Marketing
Russell Woodward	Senior Manager, Product Marketing

Teys USA Inc.

Brent Wolke	President
Jessica Cohen	Director, Business Management
Molly McAdams	Vice President, Marketing
William O'Neill	Vice President Retail
Larry Taber	Retail Region Manager

The Brookside Butcher

Mark Folkins	Owner
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The Kroger Co.

Paul Adams	Coordinator, Fresh Replenishment Meat, Seafood & Deli
Jessica Boller	Category Manager, Packaged Meat
Bill Brady	Commodity Manager, Pork
Sean Brislin	Coordinator, Promotional Planning & Category Mgmt
Tony Brown	Meat Merchandiser, Roundy's
Michael Hagemann	Quality Assurance Scientist
Steve Harris	Meat and Seafood Merchandiser
Jason Lay	Senior Category Manager, Fresh Meat
Jason Taylor	Coordinator, Commodity Management, Fresh
Will Zimmerman	Beef Commodity Manager

The Lamb Cooperative, Inc.

Larry Frenza	Regional Sales Manager
Art Heredia	Sales Manager
Ray Magallanes	Regional Sales Manager
Shane O'Hara	Chief Executive Officer
Bill Santos	Sales Manager

The Moxie Room

Stacy Dudley

The Paget Group

Heidi Meyer Partner/Owner

Thomas Foods International USA

Ernie Andreas	Corporate Chef
Alyssa Barrow	Marketing Associate
Teunis Boer	Managing Director
Greg Bourke	Chief Executive Officer
Aldo Bronzino	Associate
Michael Forrest	Chief Executive Officer
Elissa Garling	Business Development Manager, Retail
Sandy Machin	Sales and Procurement
Bill McMichael	Retail Sales
Deanna Ross	Retail Sales
Jim Sheeran	Sales
Frank Tarantino	President

Thrive Market

Mike Hacaga Meat and Seafood Product Innovation Lead

Topco Associates LLC

Keith Bollman	Senior Director, Fresh Meats
Steve Gile	Senior Category Manager, Beef
Tom Morris	Senior Category Manager, Pork

Tops Markets, LLC

James Lane Director, Meat and Seafood

Tosca

Susan Heil Vice President of Marketing

Total Protein

Dennis Binder	Vice President
Cindy Braum	
Ken Rater	Owner

TRIBALÍ Foods

John Bicos	Partner
Chris Bicos	Partner

Troyer Foods

Mark Bennett	Meat Specialist
Kenny Miller	Meat Buyer

True Aussie Beef & Lamb

Catherine Golding	Business Development Manager
Michael LaKier	Chief Brand Officer

TryAngle Foods

Neil Boyle	Sales Manager
Sands Marshall	Sales Manager
Tom McGrath	Sales Manager
Dave Von Iderstein	Vice President, Operations

Turkey Valley Farms

Brian Lien Sales Manager

Two Rivers

Seth Chapman	Procurement
Garrett Smith-Keller	Midwest Region Sales Representative

Tyson Foods, Inc.

Brad Bodine	VP, National Account Sales
Bradley Boles	Manager Sales Account
Bill Bowen	VP, Grocery Sales East
David Bray	Senior VP, Grocery Sales
William Ciani	VP, Grocery West
Keith Culver	VP, Fresh Meat Sales & Fresh Meats Division
Brian Haak	Regional Sales Manager
Christopher Haller	VP, Commercial Capabilities, Planning/Development
Jenna Harper	Sr Mgr Sales Operations & Industry Activation
Kent Harrison	VP, Fresh Meats, Marketing & Premium Programs
Don Kieffer	VP, Boxed Beef Pricing
Robert Murphy	President Midwest Service Center
Dan Peed	President, Midwest Service Center
Scott Rouse	Chief Customer Officer
John Sagel	Dir., Case-Ready Beef & Pork/Business Development
Geordie Shaw	VP Sales, Club & Small Format
Sara Shenoha	Director, Tyson Fresh Meal Kits
Mike Shinstine	Senior Director
Jim Solsma	Service Center President, Tyson Fresh Meats
Noel White	President and Chief Executive Officer
Ozlem Worpel	Manager
Kevin Younger	VP, National Account Sales

Tyson Fresh Meats

Jim Scott	Director Business Development Value Added
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Urner Barry Publications

Evan Addis	Poultry Market Reporter
Jamie Chadwick-Lee	Editorial Director
Haidee Elliott	Renewals Manager
Jim Kenny	Chief Operating Officer
Bruce Longo	Reporter, Beef Market
Gary Morrison	Director
Steve Ristevski	Key Accounts Manager

US Foods, Inc.

Christy Owens	Category Manager, Commodity Beef
Mark Winkler	Sr. Dir. Category Management, Turkey, Beef, Deli

Village Super Market, Inc.

John Sumas	Chief Operating Officer
Nico Sumas	Chief Marketing Officer

Volk Enterprises

Kerry Allen	Retail Sales
Ed Gustafson	CEO
Rorie Hill	Retail Sales Manager
John Kline	Associate

Wakefern Food Corp.

Greg Hawzen	Category Manager
Terrence Murphy	Group Vice President, Fresh
Mark Salerno	Merchandiser Supervisor
Roger Savoia	Vice President, Meat Division

Walker In-Store, Inc

Tom Bleakly	Associate
Jeff Dahler	Assistant Promotion Manager
Steve Hayes	Manager

WATT Global Media

Roy Graber	Staff Reporter
Greg Watt	President and CEO

Wayne Farms LLC

Chris Bohlen	Senior Sales Manager
Chris Bohlen	Senior Sales Manager

Wayne Provision Co

Udi Greenberg	Sales
Omer Greenebrg	Vice President

Wegmans Food Markets, Inc.

Mike DeCory	Vice President, Grocery, Dairy, Frozen
Caitlin Maeder	Wegman Brand Product Manager
Tim McGinnis	Meat Merchant
Mark Spagnola	Group Manager, Meat Merchandising

WellShire

Jessica Colameco	Vice President, Marketing
Gavin Mutter	Vice President, Wellshire Sales
Sarah Wilson	Manager Sales

Western Sales and Marketing

John Olson	President
Heidi Tancredi	Vice President

WH Braum Inc

Drew Braum	President
Jay Lowe	Research and Development

Wheatsville Co-op

Jaime Martinez	Meat Manager
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Wilcox Marketing

Darryl Marshall	Senior Account Executive
Marty Nichols	Vice President
Chad Warren	Senior Account Executive
James Wilcox	President

Winsight Media

Jeffrey Friedman	Executive Vice President, Grocery
Janet Blaney	Vice President of Sales
Karim Hussain	Marketing Specialist
Natalie Taylor	Senior Editor, Fresh

Wixon, Inc.

Michael Brewer	Technical Account Manager, Protein Group
Zak Otto	Technical R&D Manager
Lorie Tremble	Sales & Marketing Manager

Woods Supermarket

Randy Mathews	Meat Director
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World Technology Ingredients

Kane Smith	Application Specialist
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Yerecic Label

John Cravens	Key Account Manager
Brett DiNaples	Key Account Manager
Joseph Gibbons	Senior Key Account Manager
Dominic Gibbons	Key Account Manager
Nick Warren	Key Account Manager
Art Yerecic	President
Elizabeth Yerecic	Key Account Manager
Kristin Yerecic Scott	Marketing Director

Zoetis

Christi Calhoun	Head Food Chain Relations
Jeff Hay	Improveast Business Manager
Doug Ott	Pork Processing Segment Manager

Zweigle's Inc.

Tina Olschewske	Purchasing Manager
Steve Vacanti	Vice President, Marketing and Sales

ZX Ventures

Rafaela Faustino	Manager, US Licensing
Larissa Higgins	Brand Experience Director, North America
Joao Mingates Fernandes	Global Licensing Manager

John Fuller	
Bob Hallerman	Vice President
Kevin Hennessy	Retailer
Crystal Klein	
Ranae Lowe	
Logan Misewicz	Merchandiser, Meat and Seafood
Antoinette Piscottano	
Sean Schulke	Vice President, Operations
Brian Walker	Director
Timothy Whittenberger	Category Manager
Carolyn Wilson	





We Care: Our Commitment Is More Important than Ever

The Changing Landscape

The marketplace has undergone significant changes in recent years. While our practices have advanced and become more efficient, customer and consumer expectations have evolved. Companies throughout the food chain are held to higher standards. Increasingly, customers require food suppliers to demonstrate responsible business practices in a wide variety of areas, including animal care, environmental stewardship and food safety. To meet the market's ever-changing demands, the pork industry has worked hard to ensure pig-farming practices have progressed over the last several decades to keep up with the changing marketplace.

Our Future Success

To ensure continued success, the U.S. pork industry must continue to:

- Grow demand for U.S pork here and abroad;
- Increase trust and confidence in our responsible practices; and
- Minimize the risk of negative influences.

We Care Ethical Principles: Our Solid Foundation

More than a decade ago, the pork industry agreed upon a set of ethical principles under a sustainability umbrella called *We Care*. Today we continue our promise of ethical and responsible practices to consumers and other stakeholders.



Our *We Care* Ethical Principles



Food Safety



Animal Well-Being



The Environment



Our People



Public Health



Our Communities

Take Pride In What You Do: Every Action Counts

Every individual throughout the pork supply chain—from owners and managers to animal caretakers and drivers who transport hogs—has the responsibility to demonstrate a commitment to responsible pork production and build trust among our customers.

Future Forward

Our *We Care* promise allows the U.S. pork industry to build on our culture of continuous improvement and provides proof points that demonstrate our commitment to provide the safest, highest quality pork products in the world. The industry's commitment to people, pigs, and the planet is stronger than ever.

Learn more at PorkCares.org.

PLANT BASED AND CULTURED ALTERNATIVE PROTEIN PRODUCTS

In recent years there have been many new “meat alternative” products on the marketplace, as well as the ongoing development of lab grown or cultured meat products. These products have generated extensive media coverage and comparisons to traditional meat, though many claims made in the media are often unproven, misleading or downright false. This guide addresses the most common misperceptions and provides the facts.

#1: Plant based and Cultured Products are Not the Same

Although both generally are new products in the marketplace generating extensive media attention, plant based and cultured products are not the same and shouldn't be confused. Some plant based products have been on the marketplace for many years, and while newer players in the market highlight the technology they use to make their products more “meat-like,” they are still derived from plant based ingredients, such as pea protein or wheat protein. Cultured or lab grown products attempt to make meat from animal cells grown or cultured in a lab, and so are derived from animals.

#2: Odds Are You Have Not Tasted Cultured Meat

Although plant based products are commercially available, there are no cultured meat products available for purchase by consumers. To date, they have only been sampled by people with ties to the companies and a select few journalists. One company estimates it will have a lab grown beef or chicken product supplemented with “plant based filler” on the market by the end of 2018, but development costs remain high for most cultured products to be commercially available. Most experts estimate that some cultured products will be ready for commerce around 2021.

#3: “Clean Meat:” Just a Marketing Term.

Recognizing that “lab grown,” or “cultured meat,” or “fake meat” products face significant challenges with consumer acceptance, the Good Food Institute conducted at least 28 focus groups, surveys, and studies to figure out what marketing term would be most palatable. Through that process the term “clean meat” was born. However, as noted below, there is little evidence to suggest that meat grown in a lab is any “cleaner” than traditional meat, both environmentally and from a food safety perspective.

#4: Meat Is Defined

A petition from the US Cattlemen's Association asking USDA to define "meat" has led to confusion about some of the regulatory considerations related to plant based and lab grown products. USDA has had a definition of meat on the books for many years. A read of 9 CFR 301.2 suggests that the lab grown products most likely fit within the "meat" or "meat byproduct" definitions, which are regulated by USDA (underlined portion for emphasis):

- a. **Meat** "*part of the muscle of any cattle, sheep, swine, or goats which is skeletal or which is found in the tongue, diaphragm, heart, or esophagus, with or without the accompanying and overlying fat, and the portions of bone (and bone-in product such as T-bone or porterhouse steak), skin, sinew, nerve, and blood vessels with normal accompany the muscle tissue and that are not separated from it in the process of dressing.*"
- b. **Meat food product.** *Any article capable of use as human food which is made wholly or in part from any meat or other portion of the carcass of any cattle, sheep, swine, or goats, except those exempted from definition as a meat food product by the Administrator in specific cases or by the regulations in part 317 of this subchapter, upon a determination that they contain meat or other portions of such carcasses only in a relatively small proportion or historically have not been considered by consumers as products of the meat food industry, and provided that they comply with any requirements that are imposed in such cases or regulations as conditions of such exemptions to assure that the meat or other portions of such carcasses contained in such articles are not adulterated and that such articles are not represented as meat food products. This term, as applied to food products of equines, shall have a meaning comparable to that provided in this paragraph with respect to cattle, sheep, swine, and goats.*
- c. **Meat byproduct.** "*Any part capable of use as human food, other than meat, which has been derived from one or more cattle, sheep, swine, or goats. This term, as applied to products of equines, shall have a meaning comparable to that provided in this paragraph with respect to cattle, sheep, swine, and goats.*"

#5: Know the facts on Greenhouse Gases and Environmental Impact

Common claims about the benefits of plant based or lab grown meat products often focus on environmental impact. The Meat Institute has a Media MythCrusher specifically dedicated to environmental issues, but most importantly, Environmental Protection Agency data show that livestock production in the U.S. accounts for around four percent of total greenhouse gas (GHG) emissions. A recent study from the Proceedings of the National

Academy of Sciences evaluated the potential impact if everyone in the US adopted a meatless diet and found that it would only reduce total U.S. GHGs by 2.6 percent, and there would be a greater number of deficiencies in essential nutrients.

Limited research has been done on the potential impacts of large scale production of plant based or lab grown products, but a study by *Smetana et al.*, which performed a lifecycle assessment of all the possible inputs showed that, compared to meat and other meat alternatives, cultured muscle tissue had the greatest impacts on climate change, human health, ozone depletion, radiation, metal depletion, and fossil depletion, mainly due to the massive amounts of energy it would take to produce cultured muscle tissue. In the same study, vegetable proteins showed lower impacts compared to the production of chicken, but all products' impacts were lower than production of muscle tissue via cell culture.

#6: Nutrition Benefits are Unclear

Cultured products are not on the marketplace, so exact nutrition data is not available, though as a product directly derived from meat, the nutrition should be similar. New plant based products on the marketplace most commonly imitate 80 percent lean burgers and offer similar amounts of calories, fat, protein and iron. Sodium levels in plant based products are considerably higher ranging from 380-430 mg of sodium compared to just 75 mg for beef. Consumers also have the option to reduce the fat and calories from beef hamburgers by choosing leaner ground beef blends. This flexibility is not available with specific plant based products. The number of ingredients per product is also considerably different, with plant based burgers commonly featuring 20+ ingredients compared to just one for beef.

#7: Safety Benefits Unknown

To date there is no research available on food safety differences between traditional meat production and cultured or plant based products. All raw agricultural products carry some level of bacterial risk and human handling can also introduce risk. This is true whether the product is animal or plant based. Americans currently eat approximately 285 billion servings from the meat and poultry group per year. An estimated 99.999 percent of these servings are consumed safely. Although the report has flaws, recent DNA testing of plant based and meat based burgers found that nearly a quarter of plant based products had food quality issues ranging from inaccurate ingredient labels, pathogens or foreign DNA.

#8: Animals are Currently Necessary for Cultured Meat

In order for animal cells to grow in a lab, cells from an animal are needed. There also needs to be nutrients added for them to grow. Scientific journals cite the most commonly used and effective nutrient used to grow meat cells as fetal bovine serum, which

comes from fetal calves obtained during the commercial harvest of cattle for meat products. Researchers are actively looking for growth serum that does not come from an animal source and some companies claim they are using alternative options, though these are typically proprietary and unclear how effective they are growing cells at a commercial scale.

#9: Replacing Animal Agriculture Has Consequences Beyond Meat

Many proponents of alternative protein products cite a desire to eliminate or drastically reduce animal agriculture, though such a change would have major consequences across the economic and production spectrum. The meat industry employs millions of people, contributing more than a trillion dollars to the US economy. Studies have shown that land used for grazing or growing animal feed is often unsuitable for other agriculture purposes. Consideration also must be given to the range of other products that come from animals which would also need to be replaced. Losing meat byproducts would mean losing, at least in part, many chemicals used in cleaning supplies, cosmetics, plastics, soaps, gelatins, and pharmaceutical and medical supplies. While it is possible that these can be replicated another way, the environmental and economic implications of replacing those many products is unknown.

#10: All Food is Regulated

Recent calls for regulators to evaluate cultured meat have generated considerable media attention, though all foods are regulated by FDA or USDA and any products developed through novel technologies for human consumption will be regulated as well. The North American Meat Institute has adopted a position unanimously approved by its Board of Directors that USDA, through the Food Safety and Inspection Service (FSIS), should assert jurisdiction over these products. We believe this will ensure that lab-grown, cultured meat and poultry products are wholesome and safe for consumption and are labeled and marketed in a manner that ensures a level playing field in the marketplace.

#11 Inspection Occurs in ALL Meat Plants

Some have claimed there is no need for inspection in facilities where animals are not being harvested, however this ignores a key fact: USDA inspection is required for all federal meat plants, whether harvesting occurs or not. Even in plants where meat is simply processed into ground beef, hot dogs or deli meats, USDA inspectors are there daily. There may be fewer USDA inspectors, but these plants are still subject to daily inspection.

#12: Meat Alternatives are Not New

Plant based meat imitators or replacements date back to tofu in China in the year 965. More recently there have been many different

products available at grocery stores and restaurants for consumers to choose from that seek to imitate or replace meat. Newer plant based products aim to compete with meat in the meat case or on restaurant menus, though industry confidence remains high that meat will maintain its popularity thanks to its great taste, natural nutrition and integral role in our food culture.

#13: Americans Still Love Meat

USDA estimates Americans will eat a record amount of meat and poultry in 2018 as demand remains strong. Meat consumption typically ebbs and flows from year to year primarily based on prices. During times when prices are higher, consumption may slightly decline. This has been a trend for many years and is further backed by many studies consistently showing that 95 percent of Americans enjoy meat.

For more information, contact:

Janet Riley, Senior Vice President of Public Affairs
202/587-4245 • jriley@meatinstitute.org

Eric Mittenenthal, Vice President of Public Affairs
202/587-4238 • emittenthal@meatinstitute.org
www.MeatInstitute.org

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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From: [Cyndi Young](#)
To: [Cindy Cunningham](#)
Subject: RE: Dear Cyndi, Thank you for responding...
Date: Tuesday, October 17, 2017 9:43:47 AM

This is tied to a column I wrote recently. I made a pretty bold statement about what I believe about HSUS. (Final paragraph.) I've said things like this in the past in my column, but for some reason, this one hit a nerve. . .she's not the only one who reached out about this column:

October 4, 2017 By Cyndi Young Filed Under: AgriNews Column, Two Cents

Commentary.

In recent weeks I've seen and heard much about synthetic meat. Also known as cultured meat or lab produced meat it is not akin to a veggie-burger. Synthetic meat is derived from cultures of the real thing. I cannot imagine it would ever replace the beef, pork or meat from other species the majority of us living in these United States of America enjoy today, but I assume there will be a few who find it appealing simply because of the technology involved in its creation.

Nutritionally, synthetic meat should be comparable to the muscle meat from livestock because of its origin. Taste and cost and availability are all up in the air of course, as is the acceptance of food grown in a lab.

I know there are a lot of people out there quite concerned about the potential damage lab produced meat could do to the livestock industry. Perhaps I'm naïve but I do not get the sense that it will become a threat to animal agriculture in this country. The greater threat to animal agriculture still comes in the form of activist groups masquerading as simple supporters of animal welfare.

These anti-animal agriculture activist groups who use terms like "mother pigs" when referring to sows are masters of deception. They aren't schooled in animal husbandry. They aren't experts on livestock nutrition, handling and housing. They aren't lobbying at your statehouse to make things better for the animals on your farm. They are there to proselytize an anti-animal agriculture message.

Although groups like Humane Society of the United States (HSUS) talk about making sure animals on the farm are treated in a way that "reflects humane sensibilities" the overwhelming message is "don't eat meat."

Compass Group, the world's largest food service provider and Aramark, the largest U.S. – based food service company have been drawn in to the HSUS fold. According to HSUS head Wayne Pacelle, "These companies are also promoting healthier eating and giving their customers food options that are pleasing to the palate, good for the planet, and invigorating for personal health."

In a recent blog post, Pacelle announced the collaboration of HSUS and these 2 companies to create new menus and recipes. He cited Compass Group's all-plant-based dining station that will soon launch at numerous universities across the country as an example of a "concept creation" HSUS helped to develop.

While talking about humane treatment of farm animals out of one side of its mouth, HSUS is promoting a vegan diet and investing in cooking classes for chefs at the afore-mentioned companies to create meat-free meals. In Pacelle's words, "these programs will influence thousands of chefs responsible for millions of meals a day."

I don't believe for one minute that HSUS is concerned about the humane treatment of farm animals. I believe HSUS is concerned that farm animals exist in the first place. I don't believe that they are trying to make sure that consumers have options when it comes to the food they eat. I believe they are trying to eliminate meat as an option from our diet.

Cyndi Young
Brownfield Ag News
O: 573-556-1229

-----Original Message-----

From: Cindy Cunningham [<mailto:ccunningham@pork.org>]
Sent: Tuesday, October 17, 2017 7:49 AM
To: Cyndi Young <cyoung@brownfieldnetwork.com>
Subject: RE: Dear Cyndi, Thank you for responding...

I wouldn't be surprised if they send you some ads and ask you to run them. They did this with Feedstuffs--who then accepted the ads. That was several years ago.

Cindy Cunningham
Assistant Vice President of Communications National Pork Board ccunningham@pork.org
515-223-2600 office
(b) (6) cell

-----Original Message-----

From: Cyndi Young [<mailto:cyoung@brownfieldnetwork.com>]
Sent: Tuesday, October 17, 2017 7:01 AM
To: Cindy Cunningham <ccunningham@pork.org>
Subject: Re: Dear Cyndi, Thank you for responding...

I hear you and am paying attention

Sent from my iPhone

> On Oct 16, 2017, at 8:48 PM, Cindy Cunningham <ccunningham@pork.org> wrote:

>

> Personally I'm with Jim

>

> Cindy Cunningham

> Assistant Vice President, Communications National Pork Board

> 515-210-1263

> Sent from my iPhone

>

> On Oct 16, 2017, at 8:37 PM, Cyndi Young

<cyoung@brownfieldnetwork.com<<mailto:cyoung@brownfieldnetwork.com>>> wrote:

>

> I know. Jim told me not to respond anymore but I will be careful :)

>

> Sent from my iPhone

>

> On Oct 16, 2017, at 8:35 PM, Cindy Cunningham <ccunningham@pork.org<<mailto:ccunningham@pork.org>>> wrote:

>

> The Dave Warner thing was about maybe 4 years ago. Bad move on his part. They have used it in many ways like this. Just be careful because she is trying to get you to say something out of context.

>

> Cindy Cunningham

> Assistant Vice President, Communications National Pork Board

> 515-210-1263

> Sent from my iPhone

>
> On Oct 16, 2017, at 7:35 PM, Cyndi Young
> <cyoung@brownfieldnetwork.com<<mailto:cyoung@brownfieldnetwork.com>>
> <<mailto:cyoung@brownfieldnetwork.com>>> wrote:
>
> Here's where we are in this conversation.
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> From: Faye Thompson
> (b) (6)
> (b) (6)
> Date: October 16, 2017 at 6:53:53 PM CDT
> To: Cyndi Young
> <cyoung@brownfieldnetwork.com<<mailto:cyoung@brownfieldnetwork.com>><mai
> <lto:cyoung@brownfieldnetwork.com>>
> Subject: Re: RE: RE: RE: RE: Dear Cyndi, Thank you for responding...
>
> I grew up on a farm.
>
> Is this something you agree with (statement below), which appears to express NO concern for animal welfare -
unless you can state it is humane to keep a pig in a gestation crate.
>
> "So our animals can't turn around for the 2.5 years that are in the stalls producing piglets," remarked the
spokesman for the National Pork Producers Council in a 2012 National Journal interview. "I don't know who asked
the sow if she wanted to turn around."
>
> As far as I can determine, there is no way the Pork Industry can reasonably pretend they have any concern for
animal welfare if gestation crates are acceptable - as they have been for decades.
>
> But I'd like to know what you think. Is there use humane?
>
> Thank you,
>
> Faye
>
> On Monday, October 16, 2017, 1:56:43 PM PDT, Cyndi Young
> <cyoung@brownfieldnetwork.com<<mailto:cyoung@brownfieldnetwork.com>>
> <<mailto:cyoung@brownfieldnetwork.com>>> wrote:
>
>
>
> Faye,
>
> Do you raise livestock?
>
>
>
> Cyndi Young
> Brownfield Ag News
> O: 573-556-1229
>
> From: Faye Thompson [[\(b\) \(6\)](mailto:(b) (6))]
> Sent: Monday, October 16, 2017 3:51 PM
> To: Cyndi Young

> <cyoung@brownfieldnetwork.com<<mailto:cyoung@brownfieldnetwork.com>><mai
> lto:cyoung@brownfieldnetwork.com>>
> Subject: Re: RE: RE: RE: Dear Cyndi, Thank you for responding...
>
>
>
> Well, the pigs are either in the gestation crates (must be at least two weeks) or being move to and are in a farrowing crate). Either way, the pig cannot do more than stand up or lie down. I expect this is a standard practice, at least in the states that haven't banned this practice.
>
>
>
> I'm not sure you are aware of some things the HSUS has promoted which are all about animal welfare and not about not eating meat. For example, I know the HSUS was involved in Prop 2 in 2008 in California, which banned the use of the gestation crates. Here is some specific information...
>
>
>
> Proposition 2, or the Standards for Confining Farm Animals, was on the November 4, 2008 ballot<http://ballotpedia.org/California_2008_ballot_propositions#November_4> in California<<http://ballotpedia.org/California>> as an initiated state statute<http://ballotpedia.org/Initiated_state_statute>, where it was approved.
>
> Proposition 2 created a new state statute that prohibits the confinement of farm animals in a manner that does not allow them to turn around freely, lie down, stand up, and fully extend their limbs.
>
>
>
> Do you think that is not an animal welfare issue? And do you think the use of gestation crates is humane?
>
>
>
> Thank you,
>
>
>
> Faye
>
>
>
> On Monday, October 16, 2017, 1:14:50 PM PDT, Cyndi Young
<cyoung@brownfieldnetwork.com<<mailto:cyoung@brownfieldnetwork.com>>
<<mailto:cyoung@brownfieldnetwork.com>>> wrote:
>
>
>
>
>
> Faye –
>
> The gestation period of a sow is 3 months, 3 weeks and 3 days.
>
> The pigs are not kept in the stall for 4 months.
>
> You asked me if I think CAFOs are humane. I don't know why you are asking, but I will tell you what I told you in my first email – a good farmer – a person of animal husbandry – knows when the animal(s) for whom they care are unwell. There are many reasons to be sure your animals are cared for properly – not the least of which is